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The Resources of
NOVA SCOTIA
CANADA
ITS DEVELOPMENT AND
OPPORTUNITIES

Ed. 3, 1925.



Jan C.H. 2.

*Canada, National Development
Bureau*

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The Resources of Nova Scotia

Compiled for the Use of Settlers
and Investors from Material
Supplied Mainly by Federal
and Provincial Services

NATIONAL RESOURCES INTELLIGENCE SERVICE
F. C. C. LYNCH, Director

(3rd edition, 1925)

DEPARTMENT OF THE INTERIOR
CANADA

HON. CHARLES STEWART
Minister

W. W. CORY, C.M.G.
Deputy Minister

FOREWORD

THE facts in this booklet are compiled for the use of the home-seeker, merchant, manufacturer, capitalist, and visitor. Their purpose to be up-to-date, authoritative, concise.

The Dominion Government fathers all nine Provinces alike and all nationalities therein that owe allegiance to the Crown. Its interests are those of that member of the Imperial Body named Canada, and herein are set down the special claims to consideration of that member of the Dominion named Nova Scotia.

When a man with the world before him is choosing a place to visit, or in which to work, to invest, or settle, there are definite facts that he will wish to know. In this booklet we state such facts, each of which will interest one reader if not another. His final choice may result from a cool balancing of the answers to a series of questions running in his mind, but his peculiar temperament or past experience may magnify the importance of some facts or cause him to look through the wrong end of the field glasses at others. Thus a man in search of sunshine may make for a country where for nine months of the year all is dust, which he will be glad to change before long for a land of mildew: the sight of a nugget may take a man to the Yukon, but a chance illustration of apple-picking may move him back to Nova Scotia.

When a reader's interest is aroused, his plan of action may be simplified by getting in touch with the

NATURAL RESOURCES INTELLIGENCE SERVICE,
DEPARTMENT OF THE INTERIOR,
OTTAWA.

The Natural Resources Intelligence Service acknowledges with thanks the assistance given by the Departments and Branches both of the Dominion and Provincial Governments, which have examined and corrected such sections of this compilation as fall within their respective spheres and whose publications have been freely used.

"I don't know what more you'd ask: almost an island, indented everywhere with harbours, surrounded with fisheries—the key of the St. Lawrence, the Bay of Fundy, and the West Indies; prime land above, one vast mineral bed beneath, and a climate over all temperate, pleasant and healthy. If that ain't enough for one place, it's a pity—that's all."

—*Sam Slick of Slickville* (Haliburton).

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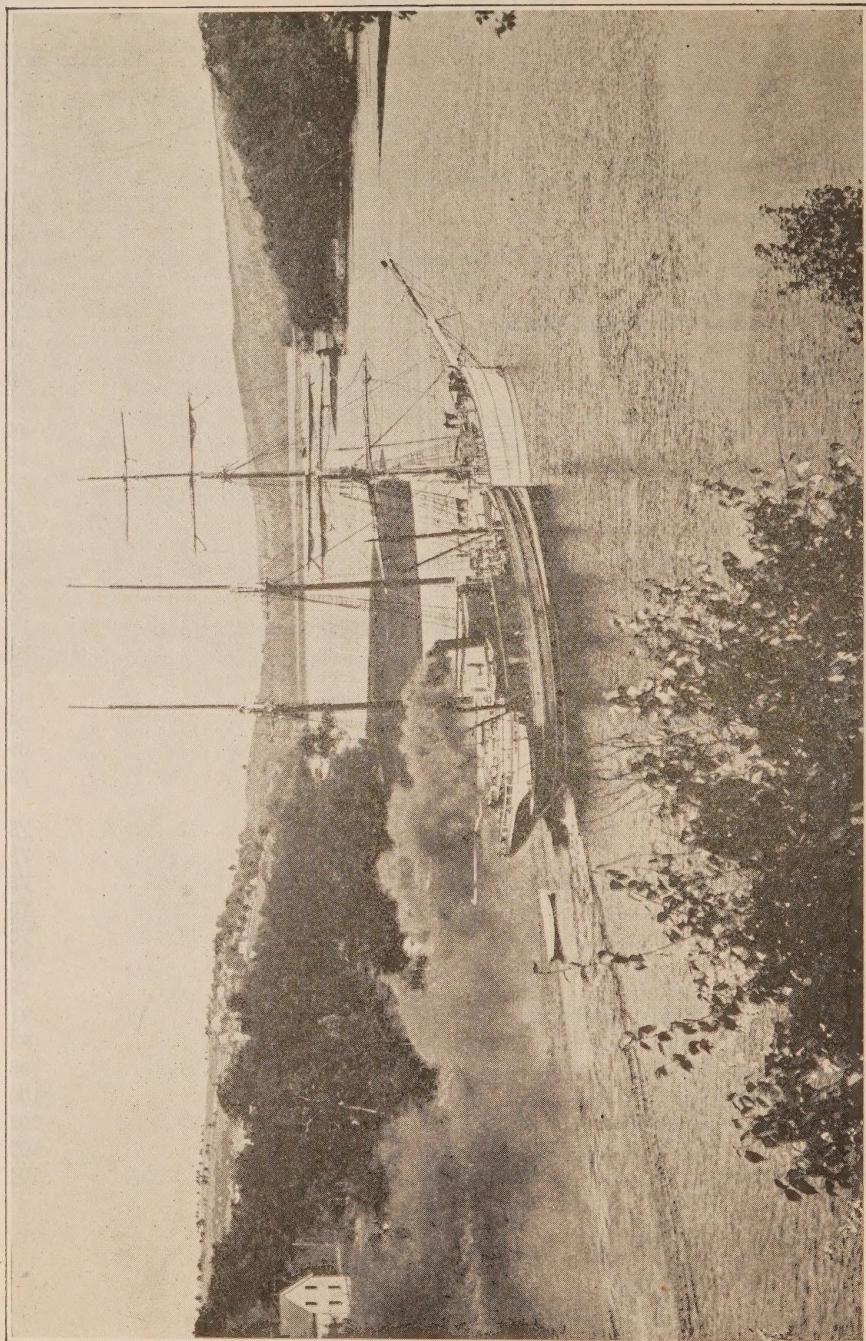
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Outward Bound! Sea-going Bargantine at Bear River



NOVA SCOTIA

IT is now 427 years since the little ship *Matthew*, "sometimes stayed" on her course by schools of cod, carried John Cabot to hoist the Royal Standard on Cape Breton island. The attempted settlement of Nova Scotia itself was the only Scottish colonial enterprise undertaken by a purely Scottish King, for the canny James VI, before leaving Edinburgh to be crowned as James I of England, was already turning the claims of Henry VII into cash and selling "Baronetcies of Nova Scotia" to such as would buy real estate in "Acadia" from his factor, Sir W. Alexander. Few British settlers, however, came, and for the next century the land was French. It was not till the foundation of Halifax in 1749, after the Peace of Aix-la-Chapelle had restored Louisburg to the French, that the British stock took firm root.

The final surrender of Louisburg to Admiral Boscawen ("Old Dreadnought") and Wolfe marked the end of the French regime. Louisburg—the mighty fortress forming the first link of the chain that France in the 18th century was stretching to hem in the British from the Atlantic to the Gulf of Mexico—is now the winter port of the British Empire Steel Corporation. Halifax, planted as its rival, remains the gateway to Canada and a base of the Imperial Navy in the North Atlantic.

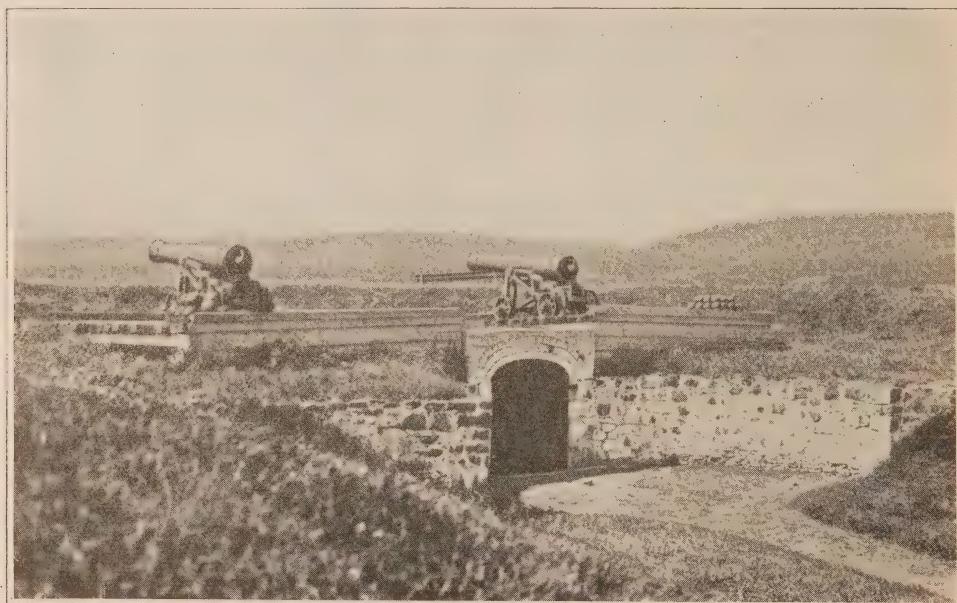
On the east coast of Cape Breton island, where the younger Cabot landed in 1489, the seams of coal, described for early voyagers as threading the cliffs and worked with crowbars for French and British cargoes, were the outcrop of what has proved to be the great and only coal field on the Atlantic seaboard of North and South America. At the opposite end of the province lies "Acadia," a name identified by romance with the "Grand Pré"—once the only space left clear by nature in the forest that spread unbroken from Cape Breton to the undiscovered prairies. Here is Annapolis Royal, the capital of Nova Scotia till 1750, and the oldest European settlement north of Florida. For a century, from its foundation as Port Royal after the visit of Champlain in 1604, it had a record of attack, capture and recapture, until finally taken by the New Englanders and renamed for Queen Anne in 1710.

Picture, then, Nova Scotia, including Cape Breton island, as one long peninsula, 374 miles in length by 60 to 100 miles in width, enriched with black diamonds on the east, and with gold-medal apples on the west; a peninsula fringed by waters teeming with fish, with a southerly coast of land-locked harbours inviting trade with the West Indies, Latin America, Africa and Europe; and, passing through the twelve-mile-wide isthmus of Chignecto, transcontinental trains carrying travellers, freight and mails to and fro for 3,000 miles between Halifax and Pacific ports.

The mail question is near to the heart of a Nova Scotian, for was it not Samuel Cunard, Halifax merchant, trader between Newfoundland, Boston and Bermuda, who first evolved the plan of an Atlantic steam-mail service, and who with Burns and McIver formed the Cunard Company and sent the *Britannia* paddling across in 1840? With delivery of

mail by airplane rather than by railway a probability of the near future, Nova Scotia, with a balance of 558 miles in its favour over New York, will be the logical landing-place for the bags.

"Two hundred years ago," said the Bulletin of the American Geographical Society in 1914, "Nova Scotia was nearly, if not quite, as promising a colony as Massachusetts. Its position was even more strategic. Its climate was as good and its resources were superior. Massachusetts has no equal area of farming as fertile as the Annapolis Valley. It has a longer coastline, fringed with harbours. . . . In 1787 Hollingsworth writes, "This country may be justly esteemed the first in the



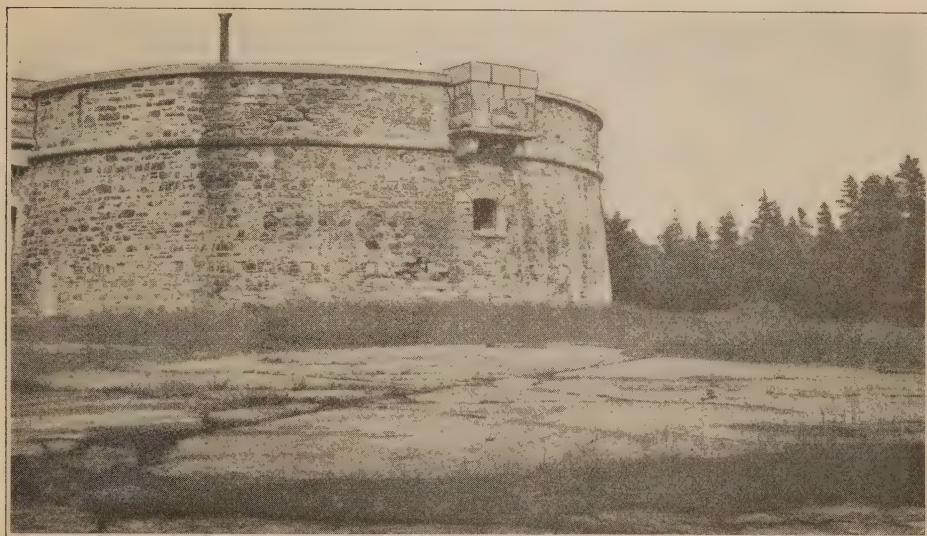
Cannon at Old Fort, Annapolis Royal. Relics of the days when the Fort was a storm centre of America

American world with respect to that situation, whether in peace or in war, which a great maritime power would wish to retain and improve." "If a vigorous climate," continues the Bulletin "thin soil, Atlantic waterfront, many harbours, and North European stock account for the phenomenal development of New England, why have these same factors not led to similar results in Nova Scotia, and still more, since the latter has coal and the former has none?" The contrast is ascribed to "geographical conditions by which Nova Scotia has long been isolated from the real centres of Canadian activity, and politically cut off from its natural neighbour New England. Nova Scotia has had to wait until Canada developed, but a new spirit of optimism is taking root in the province, and geographical conditions, which under a past regime have retarded her growth, are now likely gradually to reverse their influence." (*Colby, Economic Geography of N. America, p. 64-71*).

ORIGIN OF THE POPULATION

Of the 523,837 inhabitants 95.5 per cent were born under the British flag; 77.8 are of British and 10.8 per cent of French descent.

The French were the first to get a footing, mainly in Acadia. Here the salt marshes, needing no clearing, were especially attractive to the men from the mouth of the Loire, whose fathers had reclaimed and dyked such lands for generations. In Acadia and Cape Breton there were no large seigneuries as along the St. Lawrence, but just communities of peasants or fishermen. In the middle of the seventeenth century Louis XIV granted Cape Breton Island to one Nicholas Denys, who has left us



Martello Tower, Point Pleasant Park, Halifax

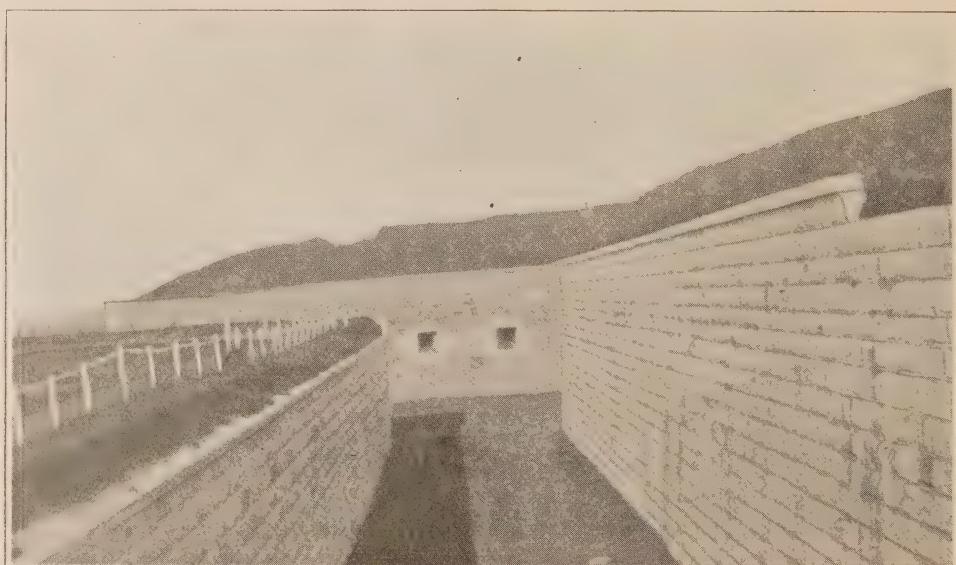
an account of the early fishing stations, their methods of curing fish and the outcropping of coal. When, after the treaty of Utrecht (1713), Louisburg was fortified to guard the mouth of the St. Lawrence and protect the fishing fleet, the French population of Cape Breton rapidly grew.

The first body of British to settle in Nova Scotia were the 2,500 disbanded soldiers who, on June 21, 1749, sailed in to clear the forest round Chebucto bay for the site of Halifax, to which city the capital was then moved from Annapolis. Soon after came 2,000 Hanoverians, who founded Lunenburg and were reinforced by others at the close of the Seven Years' War in 1763. A little later 200 Highlanders were brought to Pictou Harbour—the first wave of the 25,000 who before 1828 settled in Cape Breton Island and in Pictou and Colchester counties; for after 1745 the Highland clansmen were the unemployed, and sought fresh fields for action. When once across the sea the dormant industrial quality awoke and, stiffened by the fighting instinct, put many of their descendants in the front rank of commercial and political enterprise.

At the close of the American Revolutionary War Nova Scotia welcomed the third great influx of population in 28,000 of the United Empire

Loyalists, 3,000 of whom founded Sydney, while another 10,000 settled at Shelburne and other places, mainly in Digby county, the rest moving westward to New Brunswick and Quebec.

The number of British settlers was increased after the Napoleonic wars by grants of 100 to 10,000 acres of land to the disbanded soldiers and sailors of the King. To-day the grandsons of these grantees fill many of the most important positions in the Dominion. This Anglo-Celtic stock supplied in 1758 the twenty-two members of the first representative government in the Empire overseas and the Council of Twelve that ruled Nova Scotia until overthrown by Joseph Howe in the interests of a wider democracy. Joseph Howe, orator and statesman, is an outstanding figure



The Moat of the Citadel at Halifax

in Nova Scotia history. It was said by Lord Grey that the British Empire owed her stability to his foresight, and that the book containing his speeches and writings ought to be found on a shelf in every portion of the British Empire. Nova Scotia also claims among her sons Sir Charles Tupper, one of the "Fathers of Confederation," and three out of the nine Prime Ministers of Canada, including Sir Robert Borden, who was the first Canadian Minister to sit in the Imperial Cabinet and was the Dominion representative at the Peace Conference of 1919.

GOVERNMENT

Nova Scotia became part of the Dominion of Canada under the British North America Act of 1867. Its government is vested in:—

- (1) A Lieutenant-Governor, appointed by the Governor-General in Council, *i.e.*, on the advice of the Cabinet at Ottawa.
- (2) A Legislative Council of twenty-one, named by the Executive and holding office for life.

- (3) A Legislative Assembly, elected by forty-three constituencies.
- (4) An Executive Council of 18 (1924) ministers, with or without portfolios, named by the Provincial Premier representing the majority in the Assembly.

Each of the eighteen counties has two members of the Legislative Assembly; there are three additional members for Halifax county, two for Cape Breton, and one each for Pictou and Cumberland.

The province is represented at Ottawa by ten senators and sixteen members of the House of Commons.

Nova Scotia, as the other provinces, receives an annual subsidy from the Dominion Government. This amounted to \$661,866 in 1923, including the grant of 80 cents per head of the population.

Under the Federal Act of May 24, 1918, it is enacted that every female person shall be entitled to vote at a Dominion election who,—

- (1) is a British subject;
- (2) is of the full age of 21 years;
- (3) possesses the qualifications which would entitle a male person to vote at a Dominion election within the province.

Under the Nova Scotia Elections Act and amendments thereto a female person is entitled to vote at an election for the Legislative Assembly.

The proportion of females to males in 1921 was 49.13 to 50.87.

The voting population in 1921 (exclusive of Indians) was 145,231 male and 138,890 female. Of the males 6.72 per cent could neither read nor write, of the females 5.66 per cent.

RELIGION

The 523,837 inhabitants, by the census of 1921, are divided according to their religious beliefs in these proportions:—

Roman Catholic (French and Scotch)	30.6	per cent
Presbyterian	20.9	"
Baptist	16.5	"
Anglican	16.3	"
Methodist	11.2	"
Various	4.5	"

Under the British North America Act of 1867, which since Confederation has regulated the relations between the Dominion and Provincial Governments, freedom in religious matters is guaranteed to all.

Under the powers given in section 93 of the above Act each province has passed regulations concerning religious or devotional exercises at the opening and closing of school. As a rule, except in the case of Roman Catholic segregated schools, denominational teaching is excluded, but there is generally provision for instruction in the principles of Christian morality. In every province the school law contains a "conscience clause," permitting the withdrawal of the pupil by the parent or guardian for the period of religious instruction. In Nova Scotia the question of devotional exercises is left to the local board of school trustees.

EDUCATION

Within the last fifty years education in Nova Scotia has been revolutionized. In 1863 it is said that less than half of the children between 5 and 16 could read or write, as compared with more than ninety per cent above 5 in 1921, but Sir Charles Tupper, in spite of fierce opposition, forced through the Assembly the Free School Act of 1864, which is the basis of the present system.

Education in Nova Scotia is compulsory for all children between 5 and 16 in cities and towns and between 7 and 12 in rural districts. The statutory limit for child labour is 14 years, but under the "Towns Incorporation Act" many towns have raised the working age to 16 years unless the child has reached a certain school grade. About 21 per cent of the population is enrolled in the public schools.



Parliament Buildings, Halifax, built in 1818. In this building was adopted the first resolution looking to Canadian Confederation

"poration Act" many towns have raised the working age to 16 years unless the child has reached a certain school grade. About 21 per cent of the population is enrolled in the public schools.

The Superintendent of Education is the Deputy Minister of Education who is also Secretary of a Council of Public Instruction which consists of the members of the Executive Council and of the Cabinet. An educational grant to fully meet the recommendations of the Council is therefore ensured.

The system of education is a 12-year public school course, of which the first 8 grades are known as the "Common School," and the remain-

ing 4 as "High School." As an alternative to the high school course a pupil's education can be continued in the "County Academy."

Graduation at the close of the 12-grade course qualifies for entrance at the universities and various technical or vocational colleges. There are ten degree-conferring bodies in the province:—

	Students
Dalhousie University, founded in 1818, Halifax.	(1923) 752
Kings College, founded in 1791, Halifax, Anglican.	" 100
Acadia University, founded in 1839, Wolfville, Baptist.	" 292
St. Francis Xavier, founded in 1866, Antigonish, Roman Catholic.	" 210
Nova Scotia College of Agriculture, Truro.	" 33
Nova Scotia Technical College, Halifax.	" 50
Holy Heart Seminary, Halifax.	
Ste. Anne College, Church Point.	
Presbyterian College, Halifax (theology).	
St. Mary's College, Halifax, Roman Catholic.	

(Kings College removed from Windsor, Hants, in 1923, and became part of Dalhousie University.)

The three universities take turns in the privileges of the Cecil Rhodes Bequest, under which a scholarship of \$1,500 a year or more for a three-years' course at Oxford University is periodically assigned for competition.

The training of teachers is the special function of the Provincial Normal College at Truro, which is in close touch with the Provincial College of Agriculture. About 250 teachers are in training. There are five classes of teachers, of which the highest grade, named "Academic," implies graduation from a university of recognized standing and normal training. The average salaries for each class in 1921 were:—

Male.	Academic \$1,882	A. \$1,471	B. \$1,074	C. \$791	D. \$471
Female.	Académic 1,291	A. 907	B. 687	C. 557	D. 431

There are 46 companies of Militia Cadets connected with the various schools and having an enrolment of 2,755.

Technical Education.—In 1919 a sum of ten million dollars was voted by the Federal government for technical education, to be divided within 10 years among the provinces in proportion to their population, but so as not to exceed the sums expended on technical education in each province. In 1922-23 the sum allotted to Nova Scotia was \$33,166. The pupils enrolled numbered 4,111.

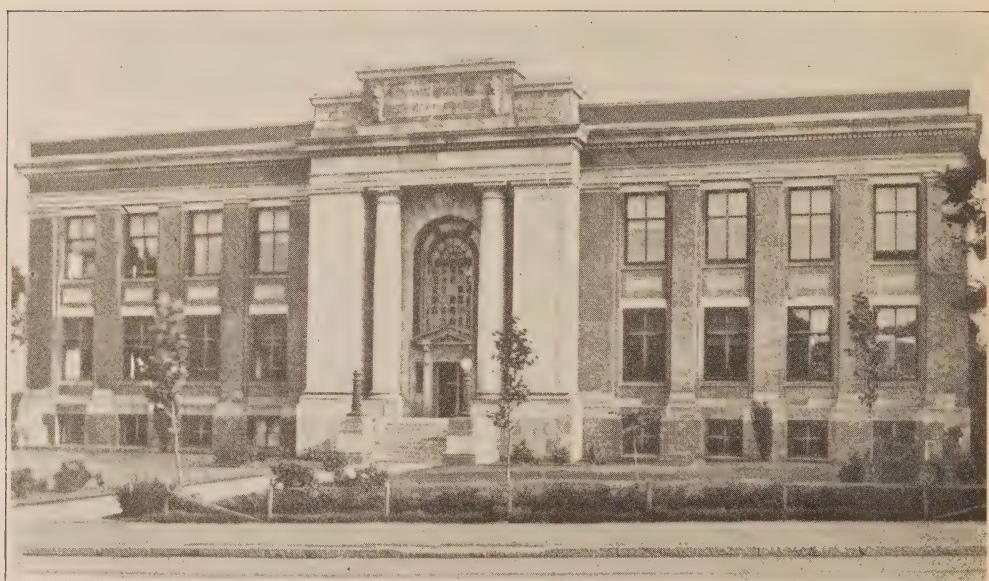
The Technical College at Halifax was founded as the administrative centre and unit for the most advanced work in the comprehensive system of technical education established by the legislature in 1907. The two-year course of intensive professional training ending in a B.Sc. degree in civil, electrical, mechanical and mining engineering, follows on a uniform preliminary two-year course at any of the four universities of Nova Scotia. The tuition fee is \$75, and a scholarship providing free tuition is granted every year in each of the eighteen counties. Technical education of a very high order has thus been made possible to ambitious and intelligent students in any class of life.

At the Technical College short courses of three months, from January to April, are also supplied at a fee of \$15 for each subject to

any applicant who has passed the eighth grade of the common school and has also had some practical experience in some branch of industry.

Evening technical classes are maintained in twelve industrial centres and in thirteen colliery communities throughout the province between October and May. There is a choice of 41 subjects, distributed according to the industrial needs of each community, taught by men engaged in practical work in the day time. There are no fees, but a returnable deposit of \$3 is required as an evidence of serious purpose.

Besides the above opportunities for education, a recent extension has been the series of home-study or correspondence classes for those engaged in isolated lumber camps or farms. Upwards of fifty subjects



The Technical College, Halifax, founded by the Nova Scotia Legislature, in 1907

are thus taught in a variety of courses, viz.:—College preparatory including Latin and French, business, drafting, domestic science and industrial. The fees for the courses vary from \$3 to \$20 and are below the actual cost.

The Technical Education Branch attempts to provide the widest range of opportunity all over the province for those who seek knowledge.

The Victoria School of Art and Design is affiliated with the Technical College.

Halifax Navigation School.—This school has quarters at the Technical College, and offers instruction to sea-faring men preparing for certificates as mates and masters of vessels from tugboats to ocean liners. Tuition, text books and apparatus are provided free of cost. The school is maintained on a co-operative basis between the Halifax Technical College and the Dominion Department of Marine and Fisheries.

There are similar schools at Yarmouth and North Sydney.

Women's Institutes.—These Institutes do much to develop the community spirit in rural districts by arranging courses in home economics, cooking and dressmaking, in particular for the wives of returned soldiers and for girls. Valuable service is also done in securing sanitary conditions, water supply, libraries, etc., for schools, in visits to hospitals, and in promoting child welfare. In 1923 the Institutes numbered 90 and the members about 3,000. Receipts were \$20,083 and expenses \$12,705.

Aid to Children.—An Act of 1917 established a court for juvenile delinquents, with a special superintendent for neglected or delinquent children, provided for the formation of Children's Aid Societies and regulated the employment of the young.

Public Health Work.—In 1922 fourteen specially trained nurses were doing generalized public health work in the various counties. All the schools are visited, and nearly 40,000 children are examined for possible defects. In February, 1922, the Massachusetts-Halifax Health Commission had 2,200 families under their supervision.

Under the public school dental clinic system, maintained also at New Glasgow and Sydney, 700 Halifax children who cannot afford private dental service receive yearly free dental treatment in the Forrest Building of Dalhousie University. An X-ray service is also given to all who need this attention.

CLIMATE

Under the influence of the Gulf Stream, which runs northeasterly and parallel to the coast of Nova Scotia till it meets the Arctic current flowing south, the climate of the province is tempered. The minimum temperature on record for Halifax is -17° and the maximum, 98.7° , and for Yarmouth -12° and 86° . Apart from the Gulf Stream, the presence of the ocean affects the southern coast much as the climate of Toronto is affected by the presence of lake Ontario. The mean winter climate registered at Toronto and Halifax was identical in 1916 (27.8°) and 21° higher than at Winnipeg. The summer mean at Halifax was 62.6° , as compared with 69.4° at Toronto and 65.1° at Winnipeg.

These climatic conditions of the seaboard are of vital interest to Canada, for they supply her with a line of harbours open all the year round from Cape Breton to the head of the Bay of Fundy.

The records of the world's average yearly precipitation run from 458 inches in Assam (905 in 1861) to 2 inches at Port Said, but for useful comparison we may take London, Edinburgh and European capitals in general which show a fall of from 20-30 inches. In a country where during the growing season the sun is powerful and which depends agriculturally so much on pasturage, fruit and general farming, an abundance of rain is important in the absence of irrigation. The average total precipitation for nineteen years was 42.46 inches at Yarmouth, 49.43 at Halifax, and 41.10 at Sydney. In the same period at these points the snowfall averaged 82.2, 76.7 and 92.8, respectively. Ten inches of snow are considered as equal to one inch of rain.

The normal hours of sunshine in a year at Yarmouth are 1,864.

Where snow lies for months continuously, the more there is, the better for transport and agriculture in season. The cold Canadian winter

with its proper appliances for heating, furs, sleighs, skis, snowshoes and skates has earned more praise than blame, and is balanced by the abundance of sunshine, a "fall" of surpassing crispness and colour, and a summer perfect in its ripening power.

Health.—The death rate for Nova Scotia stood at 12.9 per 1,000 in 1923 (for Canada 10.5), the birth rate at 24.8 (for Canada 23.3). In the decade previous to 1921 the lowest death rate was 14.34 (1912) and the highest birth rate 26.08 (1915). In 1921 Nova Scotia had one-fifth of Canada's 183 centenarians, and a percentage of those above 90 two and a half larger than the rest of Canada. The death rate of infants in 1923 was 97.8. In 1920 it was 116.5 to every 1,000 births. The Nova Scotian physique needs no comment. On sea and land and in the air during the great war the world had a moving picture of the type of men the province contributes to the Empire.

POPULATION STATISTICS

(Census of 1921)

The total population on June 1, 1921, was 523,837, an increase of 6.4 per cent over that of 1911. For all Canada in the same period the increase was 21.95 per cent and the total 8,788,483.

The area of Nova Scotia is 21,427 square miles and the density of population is now 24.8 to the square mile.

As in the other provinces excepting British Columbia and Manitoba there was an increase of the urban over the rural population in the decade, viz., 43.02 per cent urban and 56.98 rural in 1921, as compared with 38.33 urban and 61.67 rural in 1911.

The cities and towns that showed an increase of more than 1,000 in their population since 1911 were:—

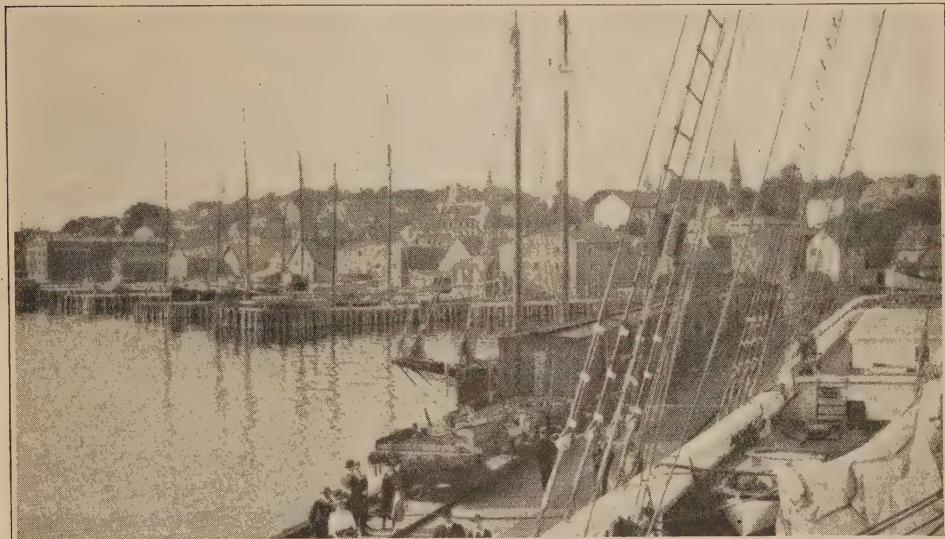
—	Population	Increase
Halifax.....	58,372	11,753
Sydney.....	22,545	4,822
Dartmouth.....	7,899	5,058
New Glasgow.....	8,974	2,591
Truro.....	7,562	6,107
Stellarton.....	5,312	1,402
North Sydney.....	6,585	1,167
Sydney Mines.....	8,327	1,095
Amherst.....	9,998	1,025

The counties that showed a decrease in population were Antigonish, Guysboro, Queens, Richmond, Shelburne, Victoria, Yarmouth.

In 1921, of the 506,824 Canadians born in Nova Scotia 56.66 per cent were living west of Ontario, compared with 61.16 per cent in 1911.

Indians.—The Nova Scotia Indians are Micmacs of the Algonquin stock. Most of them are farmers in a small way, raising hay, potatoes and vegetables, horses and cattle, but no sheep and few pigs. Many work as day labourers, others make baskets, moccasins and hockey sticks; others find employment in fishing, lumbering, hunting and trapping and as guides for sportsmen.

The nineteen agencies have an aggregate population of 2,031, of whom 2,006 are Roman Catholic. The acreage of reserves is 21,701, valued at \$82,084; of this 2,702 are fenced but only 619 acres are used for hay, grain, roots, etc. The total value of the Indian real and personal property is \$259,224, their income from all sources other than a Dominion grant of \$53,140 being \$128,196 or \$63 per head.



Lunenburg Harbour, Home Port of the Greatest Fishing Fleet in America

ESTIMATED VALUE OF THE PRODUCTS OF NOVA SCOTIA IN 1924

Coal	\$29,842,000
Coke and by-products	3,032,000
Gold and other minerals	385,000
Gypsum, limestone, etc	4,250,000
Building materials and clay products	3,500,000
Iron and steel products	8,775,000
Fisheries	9,600,000
Manufactures, ships and freights	52,526,000
Products of the farm	21,539,000
Products of the forest	11,945,000
Game and furs	850,000
Tourist and travel	7,684,000
Grand total	\$153,928,000

THE FOUR BIG INDUSTRIES

FISHERIES

The Maritime Provinces stand in a somewhat similar relation to the world-supply of fish as the Prairie Provinces to that of wheat, the fish on the provincial coat-of-arms indicating the importance of this industry from the first. Each region has a supply of feed "inexhaustible" in theory and under intelligent care inexhaustible in fact. The shallow feeding ground of "The Banks," supplementing those of the North Sea, supplied Europe with fish before John Cabot came to Labrador in 1497, and to the last day the fish that haunt them will try to spawn in and around the 5,000 miles of indented coast in the North Atlantic. Even in 1600 the English had 200 sail and 8,000 men working off Newfoundland.

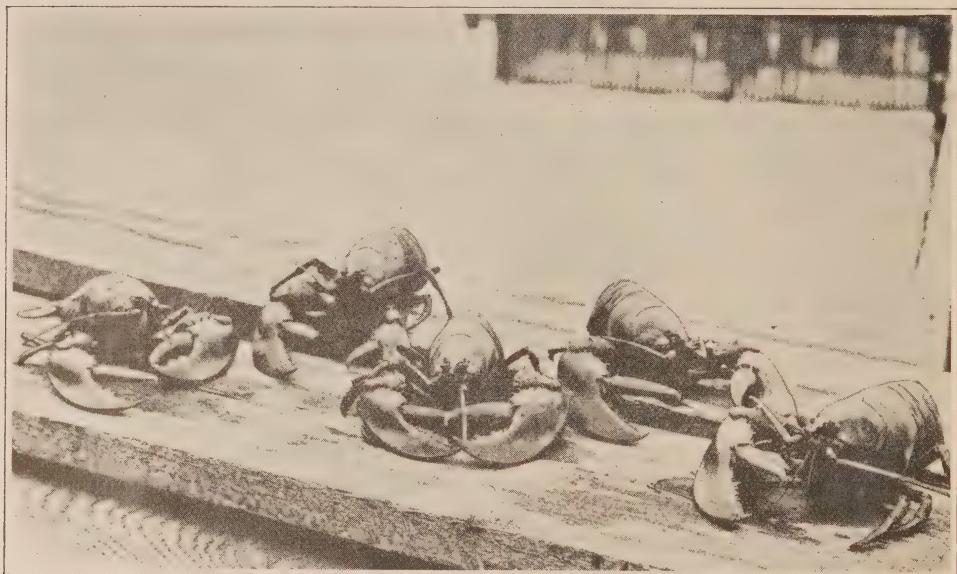
"The Banks" are a continuation of the coastal plain that extends from the gulf of Mexico to New Jersey and dips beneath the sea in southern New England.

Few of us realize how closely the Atlantic fisheries assisted at the birth of the British Commonwealth. "Fisheries and woollens," says a well known writer, "were the cradle and the swaddling clothes of English shipping." In the Middle Ages, when the Germans ruled the sea, they drew much of their revenue and all their sailors from the fisheries in the Baltic, where the herring took refuge from his natural enemy the whale. When the Dutch whalers chased the whale to the north, the herring dared to come out of the Baltic and down the Channel. The Dutch then threw on the herring fishery, and the Germans abandoned fisheries for commerce. When "the badde dealings of the Easterlings" (*i.e.*, the Hanseatic League on which the Plantaganets depended for loans and carriage of armies) almost drove the English out of the trade with Russia whence they drew a supply of naval stores, and had suppressed the English shipping, it was left to the Merchant Adventurers, organized in Tudor times, to build it up again. They proved equal to the task by exploring Newfoundland and North America for independent supplies of shipping material and fish, so, when the time came to wrest the mastery of the sea from Spain and Holland successively, England had a trans-Atlantic basis of supply and seamen trained in the hardy school of the North Atlantic. By the middle of the 18th century, the French economic system was still more firmly built on Canadian timber, fisheries, fur and West Indian sugar, and when the final struggle came the fisheries were no small part of the trophies of war. "La pêche, c'est ma folie," said Choiseul, and his great opponent Pitt, in 1761, swore that he would fight six or seven years more in America to hold the fisheries.

The fisheries of the Maritime Provinces since Confederation have been under the control of the Dominion Government. The Department of Marine and Fisheries prevents the pollution of rivers by sawdust, inspects and constructs fishways, establishes close seasons and keeps in service a sea patrol to safeguard the spawning period, to prevent illegal and out-of-season traps or poaching on closed areas, and to transfer the

fry from the hatchery to selected spots. The salmon hatcheries are at Bedford, Margaree, Windsor and Middleton. Lobsters are protected by close seasons and regulations as to size.

The Government in several ways aids the fishermen to take advantage of the abundant supply of fish it has taken care to secure. By an Act of 1906 an annual bounty of \$160,000 is given in aid of sea fisheries and building of fishing vessels. Of this bounty Nova Scotia alone earned more than half (\$93,254) in 1923. In the fishing season, under the Daily Bait Report scheme, telegrams are sent directing fishermen to available supplies of moving bait. A new development is the scout boat equipped



The Lobster Fisheries of Nova Scotia yielded 115,275 cwt. in 1924, valued at \$1,904,407.

with a radio broad-caster that tracks the migration of spring mackerel through coast waters to their spawning ground in the St. Lawrence gulf. More than 4,000,000 pounds of fresh fish yearly reach the consumer from Nova Scotia. For the benefit of fishermen and consumers alike the Dominion Government aids in marketing, in inspection of packing, and in standardizing barrels.

The six or seven hundred canneries on the Atlantic coast under the departmental eye are systematically inspected for sanitary condition and the cleanly handling and soundness of the fish. The department also offers expert advice as to the curing of all kinds of fish and the cooperage of proper barrels; barrelmaking and the curing and packing of pickled fish are carried on under the supervision of Government inspectors, who enforce compliance with standards established by the Fish Inspection Act. Cold storage establishments are maintained at Canso, Mulgrave and Halifax, at Lockeport, Port Hawkesbury, Lunenburg, N. Sydney, Yarmouth and a few other centres. The fish may be packed in containers with crushed ice or dipped in ice water for air freezing or glacing before being stored.

The produce of the Nova Scotia fisheries, "green" and cured together, had a total value in 1924 of \$8,777,251. The industry employed 18,721 hands and used vessels and gear valued at \$7,501,665, besides 248 canneries and curing houses valued at \$3,248,264.

Of the "cured" fish ninety per cent is exported to the West Indies, South America, Spain and Europe. Canned lobster of the highest quality is exported chiefly to Great Britain and France.

The chief fish marketed are, in order of value in 1924, cod, lobster, haddock, mackerel, herring, halibut, hake, salmon, smelt, swordfish. Nova Scotia has a large slice of the most productive lobster region anywhere to be found, and in cod fishing is second only to Newfoundland.

An important distinction is to be drawn between "ground fish," such as cod, halibut or haddock, which are permanent off the coast, and "school fish," such as herring, mackerel, tuna or swordfish, which move in schools along the coasts at uncertain times.

Experiments carried on in 1923 by the Biological Board of Canada with the co-operation of the Newfoundland Government tend to prove that cod are particular about the temperature of the water, which should be between 40 degrees and 45 degrees Fahr. to suit them. It is suggested that if cod fishermen were to study the fluctuations of the water temperature and the causes, their labour would be lessened and good catches assured.

Herring.—The herring is not only a national food, cheap, nourishing and appetizing when cured as bloater or kipper, but a necessity for bait. The industry is capable of a very large increase in extent and value. Why is it that the Scotch and Norwegian catch of herring alone approaches in value that of Canadian fish of every kind? It is not the case that the Canadian herring before being caught is at all inferior. One reason, apart from the proximity of the great European markets to Britain and Norway, is that the European fishermen catch the "fat," immature herring (18.6 per cent protein, 3.4 fat) in drift-nets far out at sea, while in Canada the larger adult herring is taken in herring traps and in wide-meshed nets near the coast. In Norway, as in Canada, at one time all the herring fishing was in-shore fishing, until successful experiments proved that the finest herring were to be had farther out at sea, where now hundreds of thousands of barrels are taken by drift-nets every year. In 1904, Mr. J. J. Cowie, a practical expert from Scotland, was brought out by the Government, and after years of observation and experiment with a steamer using drift-nets in the open sea, on some occasions secured sixty or seventy barrels in a single night. The catch was cured in expert Scotch style and realized as much as \$15 a barrel. In 1914-15, at the suggestion of the Biological Board of Canada, the investigations were continued by Dr. Hiort, Director of Norwegian Fisheries, whose researches proved that the types of European and North Atlantic herring are closely parallel. The problem now remains to discover the whereabouts in season of the vast schools of "fat" herring matties which must exist somewhere off our shores. Research is on the track of these "outside" waters, and, if the "fat" fish once caught is properly handled by the fishermen, properly cured by trained hands, properly graded and packed in good barrels and carefully pickled, the normal price of a barrel should double.

Shad.—It must be stated with regret that the shad, the most delicious table fish on the Atlantic coast and once the most abundant, has been in danger of disappearing from the waters of the Maritime Provinces. Records of this abundance date from 1782; in 1850 the supply was "inexhaustible"; in 1860, besides the fresh fish consumed, 7,649 barrels were cured; in 1872 three seines alone took 100,000 fish at a catch; in 1897 one seine made the record catch of 47,000, but in 1908 this same seine took only 200 fish in the whole season!

The causes of this rapid collapse of a valuable natural resource in twenty years are easy to trace. In the first place the shad was excluded



Digby Wharves—"The Port of the Peerless Bay"

from the Dominion system of fish culture, and was thus denied the privilege of proper protection. Hence dams and obstructions in rivers, especially dams built above escarpment line with no allowance for passage, forbade access to spawning grounds; the breeding fish were all caught by seines, weirs, and nets stretching completely across the mouths of streams, and that with no interval of a certain number of hours as elsewhere; the rivers were also polluted by sawdust and other matter. Thus the fish that laid the golden eggs was killed. During the same period the salmon increased in number and size, a result directly due to careful protection and propagation in Government hatcheries. The remedies naturally suggested were a close season and regulation of methods of capture, but these unfortunately ran counter to other legitimate fishing interests. Shad hatcheries were therefore recommended, their success having been proved in the Pacific, where this fish, non-existent before, has now been acclimatized.

A large supply of shad eggs is less easy to obtain than those of salmon and must be more carefully handled, but expert hands have overcome this difficulty. A movable shad-hatchery has been in use. In 1924 the value of the shad marketed in Nova Scotia was \$10,554.

Swordfish, Tuna, etc.—A great extension of swordfishing has been noted in the last few years. Motor-boats from all parts of the coast are now to be seen gathered off Louisburg ready for the "school."

The tuna or albacore, named also tunny and "horse mackerel," is considered in France an important fish for preserved food. Until the last few years it was deemed a nuisance by Nova Scotia fishermen, but markets in Boston and New York are now ready buyers. Chipped tuna steak is similar to chipped beef. The Nova Scotia tuna industry centres in St. Margaret's bay, and St. Ann's bay.

There are several other fish in the Nova Scotia limits whose value has not been fully realized, such as the plaice and several other flat fish, the "spider crab" and shrimps. Other fish have simply been thrown out—the wolf-fish or "sea cat," with delicious flaky flesh, whiter than halibut, the goose-fish, the skate, whose "wings" are now in great demand, and the "mother of eels." Another castaway, the lump fish, is prized as a dainty dish only around Halifax and the bay of Chaleur, N.B.

The roe of most fish, apart from that of the sturgeon (caviare), has been too little utilized in Canada as an excellent and nutritious food. In France it is valuable also as a lure in the sardine fishery and is known as "rogue."

We may note that the sea snail or periwinkle is marketed; and that a pink pearl from the many fresh-water pearl mussels to be found in Cape Breton island and elsewhere fetched \$250 in New York. Scales that have to be removed from the herring before it is salted and smoked are sold for the manufacture of pearls. Dulse of a good quality is gathered at Digby and is found at other points.

Oysters, Scallops and Winkles.—The chief oyster beds are on the West coast of Inverness county, but there are smaller beds at several points on the coast and in the greater Bras d'Or. Nova Scotia oysters are now shipped to England.

The winkle industry is confined to the shores of St. Mary bay and Digby neck.

No regular prospecting for scallop beds has been done until quite lately, though "Chester scallops" are a Nova Scotia specialty, and Mahone bay and Digby have yielded largely. Scallop areas are now found all the way from Digby Gut to Spencer's Island where there are sandy bottoms, near Wallace, Louisburg, and even as far seaward as the banks.

Sealing.—For several years one or more steamers have been sent out from Halifax to prosecute the seal-fishing industry. As many as 250,000 seals have been seen in past years on the ice at one time in North Atlantic waters.

Oil.—The output of crude and medicinal cod liver oil and of other fish oils amounted in 1924 to 58,752 gallons, valued at \$20,969.

Eelgrass.—The value of cured and pressed eelgrass not only as a stuffing for furniture but especially as a material for insulation in cold storage

plants and for a quilting in house-construction is now understood. The industry is already established at Little Harbour in Pictou County.

Utilization of Fish Waste.—The value of fish waste and of varieties unfit for food as a by-product of a great fishing industry is hardly realized, and the nitrogenous and phosphoric fertilizer, oil, glue, fishmeal, etc., derivable from these are mostly lost. Apart from the oil the total value of fish waste products in 1924 was only \$6,779, none of which was credited to fertilizer. A ton of dried fish scrap after the elimination of the



Drying Codfish at Digby

oil by modern processes contains about 8 per cent nitrogen and 8 per cent available phosphate. With nitrogen at \$3.50 a unit, and phosphorus at \$1.30, a ton of dried scrap is worth as a fertilizer about \$38 a ton. As it is estimated that 15 per cent of all the fish caught are discarded, the profit that might be derived at a central station with a plant suitable to the manufacture of oil, fertilizer, fish meal and glue is worth attention.

To encourage the destruction of the dog-fish that roam the sea like packs of wolves and do untold harm to fish and gear, and also to utilize their carcasses and other fish waste, the Government at one time established reduction plants in Nova Scotia, but the plant at Canso is now operated by a private firm for fish meal and oil. Even the eggs of the dog-fish (as large as hen's eggs) have a special value for tanning. The best kind of glue is a product of fish skins. To us the value of desiccated fish powder as a food for pigs and cattle, if not for men as in Japan, is

better known than in the past. The U.S.A. Dept. of Agriculture (Bulletin 378) states that fish meal is as valuable as other high-protein feeding stuffs, and in some instances has been proved more valuable; that there is no just cause for the assumption that the feeding of fish meal of good quality imparts a fishy taste to milk, butter, eggs and meat, and that there is great need of fish meal as a stock food and a *splendid opportunity in the market for it.*

There are three well defined provincial fishing areas: first, the inner shoals and ridges from five to ten miles seaward, where the shore boats operate, secondly, the middle grounds still further from land, and thirdly the great banks, or extensive undersea plateaux. It is of great advantage to Nova Scotia that all the most prolific fishgrounds of the two first-named areas can be easily reached in two hours by a boat with auxiliary power from any southern harbour.

Of the fishermen not much fewer than 20,000 have their own boats and are freeholders, native born in the shore settlements, and by family tradition and experience as daring as they are skilful. The shore boat is a launch of about eight tons propelled by a high-power engine evolved from the clinker built skiff or "flat" propelled by oars, but in place of an outlay of \$100 in past days, to equip a modern motor boat and run it for a year costs \$1,500. The bank schooners are also the best of their class and native built, a typical craft being the famous *Bluenose*, of Lunenburg, winner of the International Fishing Schooner race in 1921.

What is needed now are fast boats specially fitted with chilled storage chambers for carrying fresh fish from points of production to distributing centres.

A scientific connection between such natural conditions as amount of sunshine, salinity and temperature of waters, and the supply of minute plants, shrimps and other fish food has of late years been established in European countries, resulting in an ability to foretell in some measure the abundance or not of herring, hake, tuna, etc., in a coming season.

The Biological Board of Canada, relying on an accumulation of facts by systematic cruising and on the co-operation of fishermen in furnishing information as to place, time and quantities of fish caught, is on its way to provide similar information, which should prove of great economic value to the fishing industry.

The Biological Board is also constructing at Halifax the "Atlantic Experimental Station for Fisheries" to serve for practical education and investigation. One of the first works of this station, which is already in operation, thanks to facilities provided by Dalhousie University, is a thorough study of the smoked fish industry with a view to further improvement of the product and lessening the cost of production.

Among recent scientific discoveries relating to fish may be mentioned that of the value of cod and pollock as a source of insulin.

Recent research into the importance of iodine salts as vital to the health and growth of humans and animals, especially those that live away from the sea, should indicate to Nova Scotians the present value of dulse and other seaweeds common on the coasts. Scientists now advise the use of dulse and Irish moss in "puddings, jellies and stews as these seaweeds contain the largest percentage of iodine of any foods that come on our

table." Plants for the carbonization of seaweed with a view to the extraction of iodine and potassium carbide may later be the basis of a new industry for Nova Scotia.

MINING AND MINERALS

The monopoly of all the mines and minerals leased by George IV to his brother the Duke of York, though a source of irritation at the time, as it well might be, has proved a blessing to the province which inherited this royal lease and collects its royalty of $12\frac{1}{2}$ per cent on the gold, coal salt and other minerals mined in the year. The revenue from this source in 1924 amounted to \$688,364, besides the income from rentals, licenses, etc., amounting to \$59,232.

A general view of the geological features of the province is a key to the distribution of its mining, lumbering and agricultural resources:

"The period which followed the excavation of the lowlands and valleys in Nova Scotia was followed by the growth of great ice sheets which have now wholly disappeared. For over 100,000 years most of Canada and adjoining parts of the United States were buried by a great sheet of ice similar in character and equal in size to that which now covers the Antarctic continent." This great North American ice sheet spread radially from 3 or 4 centres. The two main centres were upland districts east and west of Hudson Bay.

The seven counties in the southwest lying between the Bay of Fundy and the Atlantic are occupied by hard quartzite and slate formations (Lower Cambrian), broken by one very large area and several smaller of intrusive granite. The same formation continues all through the southern part of Halifax and Guysboro counties as far as cape Canso. Exceptions to the above are, first, the narrow strip of trap rocks extending along the Bay of Fundy from Brier island to the Minas basin, known as the North mountain, and secondly, the Triassic strata of the Annapolis valley which it shelters. Both of these minor formations extend across the bay of Minas into the northern part of the peninsula.

The mass of the northern part, including Cape Breton island, is occupied by the Carboniferous and Devonian strata, broken up, however, especially in Pictou county, by several other formations, Silurian, pre-Cambrian (in Inverness and Victoria), etc.

Coal, Iron, Limestone.—These form the tripod on which the iron and steel industry rests, with all its ramifications into the manufacture of railway materials, mining machinery, guns, ordnance, armour plate, shafts, anchors, ships, bridges, agricultural implements, automobiles, boilers and engines.

The coal leg of this tripod is wholly Nova Scotian and also the limestone, but the iron is brought from Newfoundland.

Coal.—Outside of the small deposits of Rhode Island anthracite, Canada's maritime deposits stand alone on the entire length of the Atlantic seaboard of this continent. These deposits in Nova Scotia and New Brunswick are considered to be the southern border of a carboniferous basin occupying the greater part of the area of the gulf of St. Lawrence. The supply at the present rate of consumption is estimated to last 700 years. The reserve is estimated at nearly 10 million tons including an

actual reserve of 2,188,151,000. The quality of the coal is bituminous and especially suitable for blast-furnace coke, gas and steam. All the richer deposits are above the carboniferous limestone in strata considered to be of the same age as the coal measures of Great Britain.

In Nova Scotia there are four coal-fields with thick seams. The most important of these is the Sydney coal-field on Cape Breton island, which supplied in 1924 about 74 per cent of the Nova Scotia output and has an area of about 200 square miles. Its most valuable seams lie between Mira



British Empire Steel Corporation Works

bay and cape Dauphin, extending beneath the sea, but the extent of the submarine coal area has not been determined. The strata are almost free of faults of any size and have gentle dips.

The other fields are the Inverness field, including a series of areas extending for 50 miles along the western shore of Cape Breton island and supplying 2 per cent of the product, and the Pictou field, on the mainland, which supplied 12 per cent. This field has an area of about 25 square miles, and is of intricate geological structure. The presence of numerous faults is balanced by the size of the seams, which vary from 10 to 38 feet. Further west, on Chignecto bay, is the Cumberland coal-field, supplying a further 12 per cent.

In the Final Report of the Fuel Controller, March, 1919, the question of the substitution of coke for anthracite and the profitable utilization of

the resulting by-products is fully discussed. The following quotation is suggestive; and seems on the way to bear fruit. "There does not seem to be any good reason why Nova Scotia coals should not cover the market for domestic fuel even to the head of lake Ontario. The mines of Nova Scotia are practically all either on or within a few miles of tide-water and good harbours, so that the transportation problem becomes a relatively simple one. The quantity of coal available is enormous, and there is no doubt that the output can be largely increased and put on board steamers at such price as to make the erection of a distillation plant and the invasion of the Quebec and Ontario anthracite market a highly profitable investment."

The output of coal, 1924, was 4,973,184 long tons, of which 1,150,733 tons went to market by the St. Lawrence.

By-Products of Coal and Coke.—Important use was found for the by-products of the 332,538 tons of coke made in 1924. The gas from the 600 or more coke ovens is used in the manufacture of steel; a certain amount of the crude tar, much of which, however, has to go to waste, is handled by the Dominion Tar and Chemical Company, and there is a large export of sulphate of ammonia (Production, 1924, 7,097 tons).

"The great market is undoubtedly to combine the four products, benzol, toluol, xylol and solvent naphtha, as a motor fuel. This fuel has been carefully tested and found to give from 20 to 30 per cent greater mileage than the best gasoline with about 15 per cent greater power, easier starting, no knock with advanced spark and actually less tendency for the formation of carbon in engine cylinders." (Fuel Controller's Report, p. 81.) The manufacture of motor fuel as benzol gas increased from 246,541 imp. gal. in 1922 to 761,660 in 1924.

The increasing use of pulverized fuel and the education of the public in the value of briquettes are likely to aid in solving the problem of how to use excessive slack; and the manufacture of briquettes would also provide an outlet for the superfluous tar incident to the manufacture of coke.

Iron.—The iron of Nova Scotia is distributed in comparatively small beds and pockety deposits which cannot now compete with the hematite of Newfoundland. The Londonderry mines, which were opened in 1849, have been idle since 1908, and those of the Nictaux-Torbrook district, in Annapolis county, though yielding 350,000 tons between 1891 and 1913, are no longer worked. Another deposit is in the Pictou iron range.

The source of supply is in the Wabana mines, on great Bell island in Conception bay, Newfoundland. The ore is hematite of high grade. The distance of shipment is 400 miles. In 1924, 449,533 tons were imported, in 1921, 622,770.

Basic slag as a by-product of the blast furnaces is used or exported as a phosphatic fertilizer. Production increased from 8,877 tons in 1922 to 11,527 in 1923.

Limestone.—The Nova Scotia quarries of the limestone used for flux are all on Cape Breton island and comprise the Marble Mountain quarry in Inverness county, the George's River dolomite quarry, and the Point Edward quarry, all owned by the British Empire Steel Corp., Ltd. Limestone is also imported from Port-au-Port in Newfoundland.

With abundant coal and limestone on the spot, with iron-ore of very high quality in unlimited amount obtainable close at hand by cheap water transportation, and with harbours such as Sydney, Louisburg and New Glasgow for shipment up the St. Lawrence into the heart of the Dominion or to any other part of the world, Cape Breton island and Pictou county must rank as a most important centre of the iron and steel industry.

Oil Shales.—The strata in Nova Scotia are said not to be favourable for a flow of oil or for natural gas, but in Pictou county there is a considerable area of oil shales which should prove of importance not only for the high percentage of oil in certain varieties of shale, but from its position in the heart of a manufacturing district and its accessibility by sea.

"The oil shale of Pictou county occurs in the productive coal measures, which underlie an area of approximately 20 square miles in the vicinity of New Glasgow. . . . No systematic effort has been made to determine the number, thickness or extent of the various beds of oil shale. . . . The structure is so simple that the extent and average yield of the various beds can readily be proved by careful geological mapping, followed by core-drilling and analysis. The deposit is located in the midst of the coal and steel industry and the situation is ideal for developing a new industry." (Geol. Survey Mem. 129, 1922.)

To establish a shale oil industry a large outlay of capital is required. The retorts used in the manufacture of the products are now on the free list, and the other more costly machinery is subject to a rebate.

There is also an area of shale in Antigonish county. Cape Breton island has not been prospected for oil-shale, although beds have been reported near East bay and the geological horizons are such that important deposits might be found.

Peat.—The Dominion Government has for some time been experimenting with a view to the economic use of peat. The Department of Mines has examined and reported on eight of the Nova Scotia peat bogs, three in Yarmouth county, three in Shelburne, and one each in King's and Lunenburg, a total area of 8,671 acres. Of these the Cariboo bog of 887 acres in King's would supply not only fuel but some fertilizer for the fruit district in which it lies. The Tusket, Makoke or Heath bogs would produce a cheap fuel for the district of Yarmouth. In Northern Europe the use of peat in various forms is general. Experiments have shown that the calorific value of peat powder is seven-tenths that of coal. In Denmark when the war entirely stopped importation of coal, the railroads, many dairies, brick and glass factories, etc., were dependent for fuel on the product of the ninety-seven Danish peat plants.

Gold.—The gold-bearing rocks of Nova Scotia lie in the wide strip of Lower Cambrian quartzite and slate formation, which extends from Cape Canso to the Bay of Fundy south of latitude 45°, and which is broken by large intrusions of granite areas, mainly in the southwest of the province.

The district is about 275 miles in length, with a varying breadth of from 10 to 75 miles. Its area is figured at 10,250 square miles of which about one-third is occupied by the granite. The gold occurs almost entirely in quartz veins interbedded generally in the sedimentary strata. The more easterly part of the field proves more productive than the west-

erly, for here the greater occurrence of geological fractures and slips have formed more channels for solutions and deposition. The formation of the gold-bearing area has been compared to that of the famous "saddle-reef" of Bendigo, Australia, where veins have proved auriferous to a depth of 5,000 feet.

The recovery of gold in small quantities has been constant since the discovery in 1860. In the early days of the Royal Mint at Ottawa the gold of Nova Scotia and what came to Halifax in H.M. cruisers made up nearly the entire supply.

From 1862-1866, \$1,792,516 worth of gold was taken out, and the value per ton of ore crushed, down to and including 1917, was \$8.80. The record yield is 30,348 oz. in 1902. Production in 1924 was 750 ounces.

The gold-bearing series of rocks has been divided into the Goldenville or quartzite and the Halifax or slate formations. The Oldham gold-field, 25 miles north of Halifax, near the summit of the watershed, has been worked continuously since its discovery in 1861. In the Tangier River district, and to the northwest of this in the Caribou district, there are productive mines.

The Goldenville district, in Guysboro county, about 12 miles east of the Halifax county line, had for some years the largest yield in the province, but the Montague district of Halifax county was the chief producer in 1921. In Yarmouth county a mine at Kemptville netted its owner \$306 from one ton of ore and \$373 from two tons in January, 1917. Gold is also found in Victoria county.

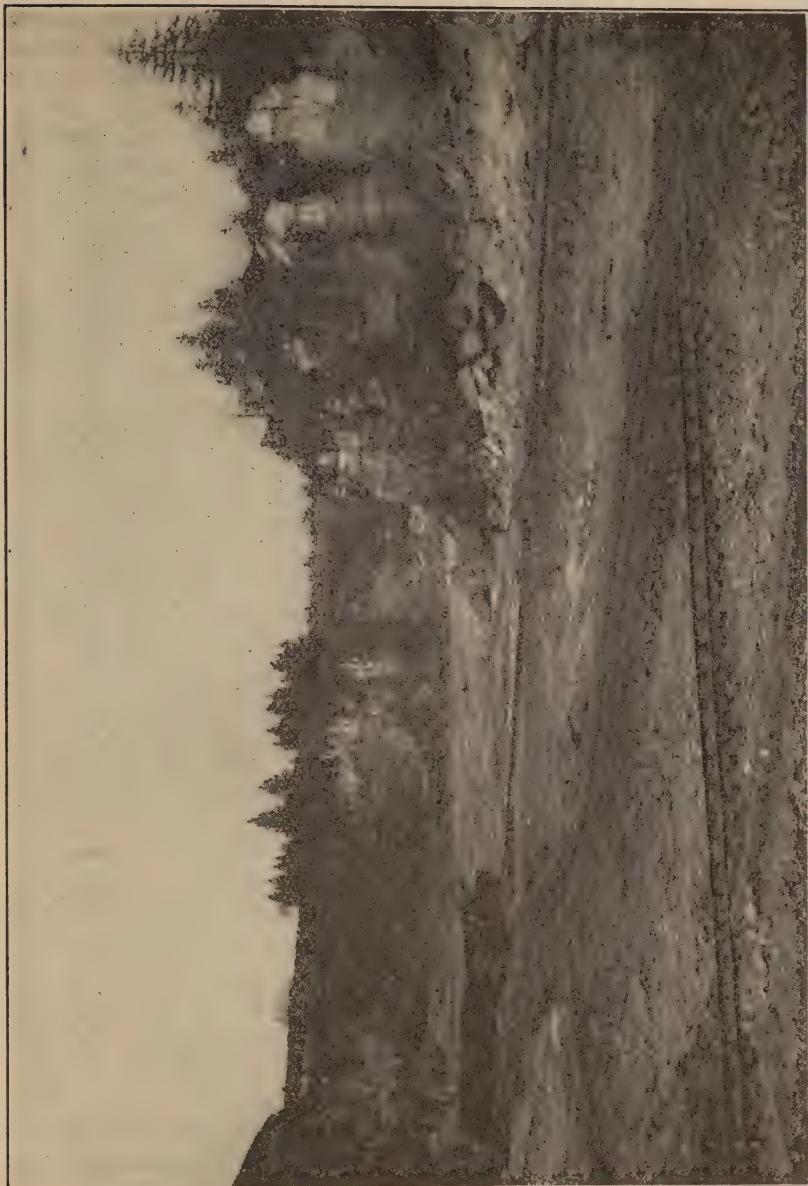
In estimating the value of the gold production of Nova Scotia, we may remember that Ontario, whose yearly product is now about 1,000,000 oz., produced only 2,011 ounces in the year preceding the opening of the Porcupine district. Considering the long continuance of finds, small though they have been, and generally the extent of the field and its analogy to fields that have been markedly successful, Nova Scotia may be considered one of the four or five gold-bearing areas of Canada.

The scarcity and cost of labour, uneconomical methods of extraction and the high cost of operating the narrow veins suggest the more extensive use of the diamond drill, the flotation process, and the application of hydro-electric power as possible means of reviving the industry. Plans for water-power development in the Sheet Harbour area are now being worked out by the Nova Scotia Water Power Commission. The recovery of arsenic from the arseno-pyrite, common in the gold veins of Nova Scotia, is doing much to stimulate the industry.

Gypsum.—The gypsum deposits of Nova Scotia are the largest of any at present known in Canada. Outside of coal, gypsum is probably the most important mineral, as regards tonnage, being exploited in the province, and even yet only a small proportion of the available deposits is being operated.

The mineral occurs in the Lower Carboniferous formation and is closely associated with beds of anhydrite and limestone. Numerous outcrops are encountered throughout the whole of the northern half of the province, extending from the district in the neighbourhood of Windsor, Hants county, eastward to the district around Antigonish, Antigonish county, and also through the northern half of the island of Cape Breton.

Gypsum Quarries



Many of these deposits are exposed in cliffs which vary from 50 to 200 feet in height and are easily accessible to rail or water transportation. Large shipments were made from the Windsor district as far back as 1829.

The gypsum on the whole is massive and is a good quality of white rock. Selenite is occasionally found associated with the massive gypsum, sometimes in veins up to a foot in thickness, and sometimes as small crystals evenly disseminated through the massive material.

In 1924 the production of crude gypsum was 435,393 tons, nearly all being shipped to the United States for calcining. The Dominions Royal Commission Report (February, 1917) remarks that "the people of Canada had to buy the gypsum back in the form of plaster at a greatly enhanced price." Plaster of Paris is now, however, being shipped to New Zealand from Iona, C.B., and markets are found in New York, Quebec and Montreal.

A report entitled "Gypsum in Canada, its Occurrence, Exploitation and Technology," has been published by the Mines Branch, Department of Mines, Ottawa, in which the deposits of this mineral in Nova Scotia are described at length. A copy of this report can be obtained by applying to the Director, Mines Branch, Department of Mines, Ottawa.

Arsenic.—The production of arsenical concentrates has lately taken such a hold in Nova Scotian mining development that it seems likely to prove one of the important resources of the province. Not only does arseno-pyrite occur largely associated with the gold veins, but arsenic-bearing ore is now being mined for its own worth. As the world's demand became greater than the visible supply, it proved profitable to work over the dumps of many Nova Scotian gold mines for this long-neglected by-product. Much arsenic concentrate has been recently shipped from this source from the Montague district in Halifax county. Highly mineralized veins of arsenical pyrite ore are found at Wellington, Halifax Co., near Farmington in Cumberland Co., and at Moose river. It is quite probable that the search for arsenic will lead to the further development of several dormant gold mines, at which the gold may prove but a valuable by-product.

So far the arsenical concentrates of Nova Scotia are shipped to refineries in Belgium, but, when the domestic product reaches a constant supply of fifty tons a day, a local refinery is more than likely to be established. Production, 1924, $2\frac{1}{3}$ tons.

The demand for arsenic has been greatly stimulated by its necessary use in insecticides for spraying and dusting fruit trees, potatoes and cotton fields. Every Nova Scotian knows that marketable apples cannot be grown without its use.

Salt.—The discovery in 1916 of a bed of rock salt is proving of great importance to the Maritime Provinces, where the fishing industry alone consumes 50,000 tons a year. The deposit was found under a farm near Malagash, Cumberland county. In October, 1918, the prospect shaft struck rock salt at 85 feet, and in 1922 at a depth of 200 feet a six-foot face of white salt, 99.1 per cent pure, was opened up. This supply of rock salt is of special interest, for research has proved that, if this or other mined salt is used in place of the tropical or solar salt imported for the curing of fish, red discoloration of cod is thereby avoided. The salt is also used for preserving mine timber by a process of salt pickling. The production for 1924 was 5,239 tons.

The amount of deposit is estimated at 25,000,000 available tons. Some of the samples taken from this deposit have shown percentages of potassium salts; this salt is mined and sold separately.

So far the only salt-producing district of large extent in Canada is in western Ontario, the salt needed in the Maritime Provinces being imported from Turks Island and the Mediterranean.

A salt deposit occurs at Falmouth, Hants county, and brine springs have been located in Nova Scotia at various points between Baddeck and Springhill, and also in the Windsor and Walton area, but no rock deposit of economic value was discovered until 1916.

OTHER MINERAL DEVELOPMENTS AND OCCURRENCES

Wartime needs led to diligent prospecting and extraction of the less known minerals, but recently the production of these has been confined to arsenic, tripolite, manganese and barytes.

Antimony.—In the West Gore district of Hants county 533 tons of antimony concentrate were produced in 1918, but there has been no shipment from Canadian sources since the heavy decline in price.

Barytes is worked at East Lake Ainslie, Inverness county, and at Five Islands, Colchester county. In 1924 Nova Scotia with 290 tons (ground) was the sole producer among the provinces.

Feldspar.—A deposit of orthoclase feldspar has been worked experimentally at Beachville, St. Margaret's Bay road, Halifax county.

Lead.—Argentiferous galena has been worked at Musquodoboit in Halifax county, and also in Cape Breton county.

Lime.—A small plant near Windsor produces lime as a basis for insecticides, but the 10,000 tons used annually in the province are all imported.

Magnesite.—A deposit near Orangedale on the Great Bras d'Or lake, Inverness county, has been mined for experimental purposes. Magnesite is essential as a lining for steel furnaces.

Manganese.—In the New Ross district, Lunenburg county, at the time of great demand, a company took out high grade ore averaging as much as 92 per cent manganese dioxide. The waste dumps were also sorted over and the sample ton produced ferro-manganese with 30 per cent manganese and 30 per cent iron. At Walton in the Minas basin, Hants county, a deposit of manganese in sandstone was prospected, the 15 per cent manganese from which could be concentrated to 45 per cent. The price at one time rose to \$250 a ton at Pittsburg. In 1921, 450 tons were mined, but production has gradually ceased. The ore occurs in Cape Breton and Colchester counties and at Nicholsville in King's. Manganese is used for steel alloys and also in making dry batteries and glass.

Molybdenum.—From New Ross there were shipments in the time of high prices, and Gabarus Bay, Cape Breton island, was also a producer. Molybdenum in a steel alloy produces the strength and toughness necessary in airplane motors, automobile and tractor construction and in shafting and springs.

Ochre.—Deposits have been worked in King's county, Londonderry area, and there is a good deposit at Ardoise, Hants. Ochre is used for purifying coal gas and as a pigment.

Tungsten Ores.—The Moose River district in Halifax county, west of the Tangier river, was noticed in the Report of the Munitions Commission as one of the most productive Canadian sources of tungsten minerals, but little has been shipped from the Scheelite mines in the last few years.

Tungsten ore (scheelite) was also shipped from Waverley, a point on the C.N.R. north of Halifax. This was hand-picked and sold to the Munition Resources Commission at Ottawa. Tungsten as a steel hardener is more limited in its source than molybdenum, but is specially needed for high-speed tools and electric bulb filaments.

Tin.—"The occurrence of tin ore (in Canada) has been reported from several localities, the most important, perhaps, being the discovery of cassiterite near New Ross, N.S." (Mineral Production of Canada, 1916.) See Reports of Geological Survey for 1907 (p. 77), 1908 (p. 154), 1910 (p. 253), 1912 (p. 389).

Tripolite or Diatomaceous Earth or Kieselguhr.—Of this Nova Scotia is now the only producer in Canada. It has been shipped from lake Silica in Colchester, from St. Ann, Victoria county, and the Bass Rock lake (Cumberland county). Other deposits are found at Little river on Digby neck, Salmon River, Digby, Folleigh lake district (Cumberland) and at Brona lake in Pictou county. Tripolite occurs in shallow layers at the bottom of small lakes and is used as a polishing material and for insulation of steam pipes. It is reported that one million tons are available in the Dominion Atlantic R.R. territory. The Dom. Bur. of Stat. shows a production of 36 tons in 1924.

Zinc.—At Stirling, in Richmond county (Cape Breton island), the analysis of an extensive body of ore showed from 4 to 30 per cent zinc, 7.5 per cent lead, and 3.5 per cent copper. Prospects for development are now likely.

Radium.—Radio-active rock is reported near Stewart Station, Halifax county.

Prospecting.—The study of the dispersion of the glacial drift is a matter of practical interest. In prospecting for gold, tungsten, coal, etc., in Nova Scotia, the first signs of the mineral sought have usually been fragments in the drift: and in many cases the main deposit has been found by carefully tracing this drift or "float" back along the direction of glacial grooves to the parent ledges. (Geo. Survey, Mem. 140.)

BUILDING STONES

It was not for lack of stone in Nova Scotia that Government House, Halifax, was built of blocks sent from France to fortify Louisburg. Although at the present time the quarries of Nova Scotia are with few exceptions idle, it is important, in view of the future demand for building material, to state where it can be best obtained. Building stone is, in general terms, either limestone, sandstone or granite.

Limestone.—The limestone of Nova Scotia has been little used for building purposes, though the crystalline limestone or marble obtainable

from Marble mountain has attracted the attention of experts. Here there are at least six varieties, running from fine white statuary marble to dark, striped and variegated. The Grand Quarry may also be mentioned as the centre of a field of 200 or 300 acres about 450 feet above the lake and 300 yards from deep water. From this quarry immense building blocks could be removed, but so far the rock has been used almost entirely for lime and flux. As long ago as 1879 the Geological Survey suggested the working of this field as "a new industry and source of wealth in Cape Breton island," but development lingers.

Sandstone.—The building sandstones of Nova Scotia have been worked in the past more than they are at the present time. The red sandstone of Amherst has been used in most of the public buildings of this town and in Truro, and shipped as far west as Hamilton and Toronto.

The greenish-grey sandstone of the Wallace district, on the shore of Northumberland basin, has been quarried for 100 years and used for many buildings in Quebec, Ontario and the Maritime Provinces. It has also been shipped to New York, Boston and Providence. The Victoria Museum at Ottawa is partly built of this material and trimmed with the blue variety, which lends itself well to carved work. Shipping facilities are good both by water and rail. A red sandstone has been shipped from the River John area to Toronto and elsewhere and the olive-green variety, known as "Pictou" stone, the amount of which is practically unlimited, has been much used for public buildings, churches, and other purposes in the Maritime Provinces. To this stone a medal was awarded at the Colonial and Indian Exhibition in 1886. At West River, near Scotsburn, in Pictou county, there is a grey sandstone of fine grain and excellent quality, and in the Whycocomagh area, at the head of Saint Patrick's channel, there is a body of red sandstone four miles from tide-water.

Granite.—There are a few areas in the mass of granite intrusives between Cape Canso and Yarmouth where granite has been found suitable for building and decorative purposes. The Nietaux fine grey stone is in demand for monumental work, and has been shipped as far as Winnipeg. The granite of the New Germany district in Lunenburg county has been made use of for heavy construction, such as bridges. Shelburne county has an excellent fine grained granite which can be seen to advantage in the Customs building and Post Office at Shelburne. The Halifax area has fine quarries lying at the edge of the granite mass extending west from Halifax harbour. This is a very coarse stone with black spots, in unlimited amount, and can be seen in St. Mary's cathedral in Halifax. The Bank of Commerce building at Halifax is built of granite from the disused quarry at Terence bay. There is also a massive field in Guysboro county, at Whitehead, forming a cliff of 12 feet above high water such that vessels could be loaded directly from the shore. The material is a rather coarse grey to white granite and is considered the most promising in the province for the production of heavy stone.

Decorative Stone.—Volcanic rocks of porphyritic or brecciated structure occur in several areas, the best known of which is Scatari island, off the extreme edge of Cape Breton. The coast is strewn with pebbles displaying a profusion of beautiful colour when wet. The cost of production would be considerable in the extraction of good sized blocks, but there is

an enormous amount of stone of unusual beauty, very hard and taking a fine polish. The green and red-brown slabs to be found among others in many museums are particularly attractive.

Tube Mill Pebbles.—Many thousand tons of pebbles of volcanic origin "better than the commercial flint pebbles with which they were compared" could be sorted and shipped from Lever beach and other beaches in the Gabarus bay locality. (See Geol. Sur. Rept. 1917, 23 F-27.)

"*Millstone Grit*," a buff-weathering sandstone 5,000 feet thick, has been quarried at Wallace for more than a century. Grindstones are quarried from it near Joggins and Amherst. The output of the province, 460 tons in 1924, all came from Merigomish Harbour in Pictou Co. These grindstones were almost entirely tool stones, the larger stones required for the pulp industry being a product of New Brunswick. It is possible that pulp stone of the necessary size (standard 54 inches diameter and 27-inch face), texture, grinding quality and strength could be produced near Amherst and other places. The life of a pulpstone is about one year only, so that there is a continuous market. The stone when quarried is comparatively soft, but hardens by exposure in storage.

Sand and Silica.—Moulding sands for foundry work are available from deposits near Elmsdale, Belmont Station and Dartmouth. It has been suggested (Geol. Survey Vol. IX, 151 M) that the stretches of white, wind-blown, silicious sand, many feet deep, lying in the neighbourhood of Port Mouton (Queens) and Barrington Bay (Shelburne) might prove of economic importance. Large beds of white quartzite occur at Chegoggan Point, Yarmouth County, and near Millville, in Kings. Silica rock is found in large amount near Orangedale and Whycocomagh, but the whole of the output in 1924 (2,678 tons) was derived from the Leitche's Creek quarry near Sydney, C.B.

Road Material.—A large supply of the best possible road material, easy to move and ship by water, can be got from the trap rock of Digby Neck.

Amethysts, Garnets, etc.—Mineralogists will be interested in the minerals found in the neighbourhood of the Bay of Fundy. A bed of garnet-bearing rock, 36 feet wide and several miles long, can be seen at Chegoggan Point, Yarmouth County. Fifty per cent of the rock consists of garnets, which range to $\frac{1}{4}$ -inch in size. At Partridge Island, Cumberland County, crystals of amethyst an inch in breadth, have been found covering foot-square surfaces. As early as the years 1605-10 crystals were sent from Partridge island to Henry IV of France and one from Blomidon was among the French crown jewels. A bushel of amethysts was found in digging a well at Kentville, and they occur in several localities about the basin of Minas. Bloodstone, chalcedony (white, red and blue), carnelian, agate (onyx), jasper and staurolite are also to be found.

"A world-renowned section of this Carboniferous formation (sandstones, shales and limestone with 70 interbedded coal seams) "occurs in the sea-cliff at Joggins, where the inclined series of beds is seen in unbroken order for a distance of 10 miles. The coal measures are full of interesting markings and structures that show the conditions under which they accumulated. Fossil tree stumps, rooted in place and erect though enveloped in sand and subsequently turned to stone by mineralizing under-

ground waters, mark the sites of coal forests of the medieval stage of earth history. Reptile skeletons in some of the stumps show that primitive lizards found refuge in hollow trunks. Foot marks on the surfaces of mud layers, now completely indurated, relegate these creatures to the mud flats of long ago. Raindrop pits tell of passing showers, mud cracks of intervals of warm dry sunshine during the building up of the deposits. Few sections on this continent have furnished such a clear and realistic picture of past geography as this section of Joggins." (p. 54. G.S. Mem. 140.)

Slate.—Good roofing slate was at one time quarried at East Gore and Kentville. Many houses in these localities have slate roofs thirty years old and more.

Clays and Shales.—Nova Scotia is more liberally supplied with raw materials suitable for the use of the clayworker than any other province except Saskatchewan. This is in large part owing to the presence of Carboniferous coal measures, as this series of rocks, in addition to the coal beds, contains numerous beds of clays or shales. Very valuable clay beds of Cretaceous age occur at Shubenacadie in Hants county, and in the Musquodoboit valley in Halifax county. These clays resemble the stone-ware and fireclays of extensive clayworking industries.

The late marine, or Pleistocene, clays are found at many localities, notably in the Annapolis valley and along the line of the Canadian National railways between Enfield and Shubenacadie. These marine clays, which are generally reddish in colour, occur on the surface, and are soft and stoneless. They furnish the raw material for a good cheap red building brick, and for field drain tile or flowerpots.

The shale deposits are seen to best advantage in the Sydney, Inverness, and Pictou coal-fields in natural exposures, either in cliffs along the Atlantic coast or along the sides of stream valleys. The shales are constantly encountered in coal-mining operations, especially when cross-cutting the measures from one coal seam to another.

CLAYWORKING INDUSTRY

A very complete description of these shale beds, accompanied by the results of physical tests on samples collected from them, is given in the report on "Clay and Shale Deposits of Nova Scotia," by Messrs. Ries and Keele, and published by the Department of Mines. (See also Mines Branch Memo. No. 5 and "Pottery Clays in Canada," J. Keele, 1922.)

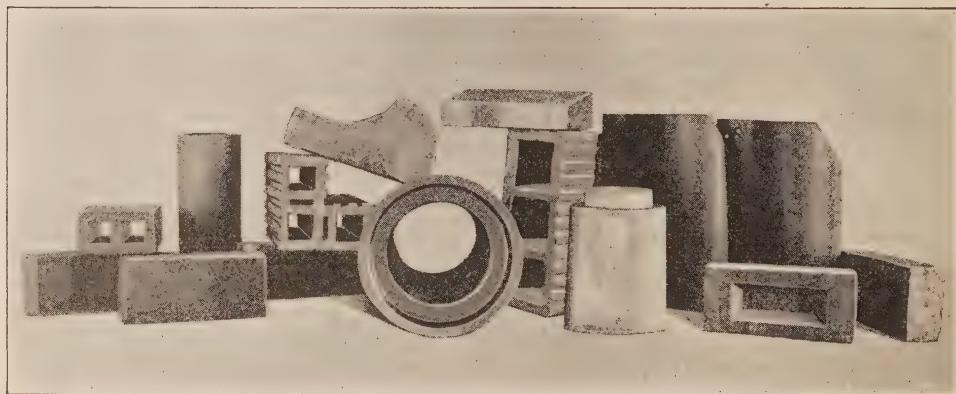
All of the shale beds in the Carboniferous measures are plastic when ground and worked up with the required amount of water and consequently can be formed into ware of any desired shape by almost any type of clayworking machinery.

The list of ware that can be made from these shales includes common building brick, face brick, hollow building brick, sewer pipe, electric conduits, floor tile, roofing tile, paving brick, firebrick, stove linings, garden urns, chimney flues, etc.

While none of the beds in the Carboniferous measures are highly refractory, except in one instance at Inverness, there are several beds of semi-refractory shales in the Pictou coal field which are extremely useful in the steel industry or for the manufacture of sewer pipe or other

vitrified wares. A company has been recently incorporated to develop a deposit near Sunnybrae in Pictou county for the manufacture of fireclay products.

The real fireclays in Nova Scotia are seldom found in the coal measures, but occur as soft beds of Cretaceous age at the localities given above. These clays are also used in the manufacture of stoneware goods.



Samples of Pottery and Building Material that can be produced from Nova Scotia Clay

One of the best refractory materials in the province is not a clay at all, but a hard rock known as felsite, a large deposit of which occurs at Coxheath not far from the city of Sydney. This material when crushed to the proper size and bonded with plastic fireclay makes a very superior grade of refractory brick. The southwestern part of the province between Halifax and Yarmouth appears to be lacking in clays either of the hard or soft variety.

At several points in the province there is a material of peculiar interest, known as infusorial earth. This is a very fine grained silicious deposit of organic origin and has many uses in the industries. Its chief use in the clayworking industry is in the manufacture of insulating brick, which is used to great advantage in conserving heat in furnaces. (See Tripolite, p. 36).

In addition to the clay resources, there are still other materials which are included under the general head of ceramics, one of the most important of these being silica rock. There are extensive beds of quartzite in Cape Breton, which contain over 95 per cent of silica, and are found to be suitable for the manufacture of silica brick.

Silica brick is becoming a very important item in metallurgical and by-product coke-oven practice, and a large quantity of this expensive material is imported into Canada every year. It is now being manufactured by the British Empire Steel Corporation.

The vast and varied resources of clays and shales in the province of Nova Scotia have been little developed up to the present. Timber has hitherto been cheap and plentiful, and in some localities has been used for structural purposes entirely. The Maritime Provinces are well provided with clay products for structural purposes, as they possess a great variety of the raw material as well as the coal fuel for burning the ware.

As far as structural materials are concerned, the clayworking industry of Nova Scotia is confined at present to the manufacture of common red brick made from the surface clays. These bricks are used for face brick as well as for backing and filling, but if a face brick of special colour, finish, or texture is desired it is necessary to import it. Face brick, which cannot be excelled by any imported article, may be made from several of the shale beds in the Pictou coal field and at other localities.

Hollow building blocks, or fireproofing, as these wares are sometimes called, are now made in the Maritime Provinces, and their use is becoming very general in all parts of Canada. They are cheaper to build with than brick and, on account of the hollow spaces, are said to make better walls in dwellings for withstanding extreme changes of temperature.

A small quantity of field drain tile is made at the brick plant at Avonport, in Kings county. Most of the surface clays mentioned in the report of the Department of Mines are suitable for the manufacture of agricultural tile.

Firebrick for lining the ladles used in the steel works are manufactured from the semi-refractory shales which are mined with the coal at Westville. These bricks are hard and dense in structure and give better satisfaction for ladle linings than a more refractory brick. Firebrick is used in many cases where a less refractory brick would do, so that the shales at Westville could be made into brick for many purposes where high refractoriness was not the only thing to be considered.

It is possible that some of these shales could be used for the manufacture of architectural terra-cotta, a material that is steadily increasing in use as a facing for business buildings in cities. This class of clay ware is not made at present in Canada.

Red and buff floor tiles or roof tiles can also be made from these shale beds to replace the large quantities imported from Great Britain and the United States.

So far as can be ascertained, pottery manufacture has never been attempted in Nova Scotia, except by a small plant at Enfield, which makes the ordinary red flowerpots from the surface clay in its neighbourhood.

There are excellent stoneware clays at Shubenacadie and Middle Musquodoboit. At St. John, N.B., the clay from the latter point is used

for making tea pots, bowls, jars, crocks, etc., and is found very suitable for the purpose. Until a few years ago the firm obtained its clay from New Jersey.

The tourist trade of Nova Scotia offers a good opportunity for the manufacture of clay wares for souvenir purposes. Many visitors would gladly purchase small pieces of clay ware if they were of local manufacture, made from local materials, and had some distinctive qualities besides.

Several experiments have been made at the clay testing laboratories of the Mines Branch at Ottawa on the suitability of some of the clays of Nova Scotia for modelling and pottery-making. It was found that some of the stoneless brickclays of the Annapolis valley will make good red ware, which can be enamelled with the ordinary majolica glazes.

The clays of Shubenacadie and Musquodoboit are excellent modelling clays which could be used for instruction work in technical schools and for making the finest kind of glazed art pottery.

A deposit of hard white china clay has recently been located near Middleton.

At Middle Musquodoboit splendid exposures of bright red, grey, black and white clays occur at points on the newly completed railway grade, and in the banks of the river, as far east as Elmsdale. There is no doubt that these clays underlie the valley for several miles, although they are almost wholly concealed by glacial drift. Red or rose coloured clays seem to predominate near Middle Musquodoboit.

NOTE.—The products in the illustration are all made of Canadian clays, and though not entirely Nova Scotian, could all be duplicated from Nova Scotian material.

FORESTRY

In 1909 the late Dr. B. E. Fernow, of the University of Toronto, was engaged by the government of Nova Scotia to make a reconnaissance survey of the forests of the province. His report, entitled "Forest Conditions in Nova Scotia," was published by the Conservation Commission in 1912.

The following table, contained in the above report, will give a general idea of the ratio that the forest area bears to non-forest in this province.

The total land area of the province is 13,483,520 acres. The difference between this and the 12,070,219 acres classified is accounted for by water areas other than the Bras d'Or lakes and by small areas which for various reasons were not within the scope of the reconnaissance survey.

Fifty-four per cent of the land area carried forest growth. Including the brûlés and barrens, which are of potential value for forest production, about 70 per cent of the total land area of the province can be considered as primarily forest land.

The total forest resources of Nova Scotia, including all classes of merchantable material, are now estimated to amount to the equivalent of 30,000 million feet board measure, of which about 57 per cent is coniferous or softwood timber.

CLASSIFICATION OF LANDS AND FORESTS (1909-10)

—	Acres	Per cent
<i>Mainland</i> —		
Farm (cleared lands).....	1,832,736	19.0
Meadow (natural).....	21,680	0.2
Open bog (savanna).....	37,793	0.4
Forest (a) conifers.....	1,036,175	10.8
(b) hardwood.....	330,856	3.4
(c) mixed.....	3,685,807	38.3
Burnt and barren lands.....	551,098	5.8
Unclassified.....	2,123,778	22.1
	9,619,923	100.0
<i>Cape Breton Island</i> —		
Cleared lands, farms, mine dumps, etc.	437,568	17.9
Forest (a) conifers.....	859,704	35.1
(b) hardwood.....	195,968	8.0
(c) mixed.....	480,784	19.6
Burnt and green barrens.....	455,456	18.6
Unclassified.....	20,816	0.8
	2,450,296	100.0

Saw Material.—Of the 11,000 million board feet suitable for lumber, there are estimated to be 7,500 million feet of softwood, and 3,500 million feet of hardwood. Spruce provides about one-half the softwood, with hemlock, balsam and white pine in order of predominance making up most of the balance. Of the hardwoods, beech, maple, and yellow birch are the most abundant and valuable.

Pulpwood.—Of the species used in the manufacture of pulp there are estimated to be twenty-five million cords of spruce and balsam and 4,900,000 cords of poplar, hemlock, and jack pine, including the saw material of these species.

Timber conditions in Nova Scotia are related to the geological formation. The granite area, while seldom affording good farming land, and showing a proportion of swamp and of natural or burned over barren, has good forest soils, the thinner soil on the ridges for fir, that of the steeper slopes for mixed growth, and that on the gentler slopes and on the bases for spruce and hemlock. The quartzite areas, composed of rock less easily disintegrated than that of the intruded granite show more frequent barrens. It is the slate formations that occur in these areas and the better of the glacial deposits in the valleys that provide good farm lands and show a finer forest growth. The timber of the northern slope, which drains into Minas basin and Northumberland strait, though of the same character as the timber of the Atlantic slope, is more luxuriant owing to the diversity of limestone, slate, sandstone and conglomerate.

Laws for the prevention of forest fires have been enacted since 1761, and in 1921 the 'Forests and Game Act,' consolidating the previous laws for the prevention of forest fires and the protection of game, came into operation. Under this Act a Commissioner of Forests and Game was appointed.

Production.—In 1923 Nova Scotia was fifth among the provinces in lumber production, with a cut of 96,694,000 feet, valued at \$2,281,949, compared with a cut of 101,451,000 in 1922, valued at \$2,509,912.

In 1922 there were 60 saw mills producing over 1,000,000 B.M. each and 2 over 5 million.

In 1923 the pulpwood cut was 51,281 cords valued at \$416,399. Ground wood-pulp was manufactured to the amount of 26,979 tons, valued at \$838,358, but neither chemical pulp nor paper were made in the province.



Loading Lumber at Pictou, N.S. The Value of Nova Scotia's Forest Products in 1924 was Twelve Million Dollars

Pulp in Nova Scotia is made almost entirely from spruce and balsam, but a good deal of poplar pulpwood is exported to the United States. The 9 pulp mills producing in 1923 were:—

Bear River Pulp Co. (formerly Clark Bros.), Bear River. Clyde Pulp Co., Clyde River, Shelburne County. Gaspereau Light, Heat and Power Co., White Rock, King's County. La Have Pulp Co., Morgan Falls, New Germany, Lunenburg County. MacLeod Pulp Co., Milton, Queen's County. Nova Scotia Wood, Pulp and Paper Co., Charleston, Queen's County. Oxford Paper Co. (formerly Cape Breton Pulp and Paper Co.), Murray, C.B. Premier Paper and Power Co., Hartville, Hants County. Sissiboo Pulp and Paper Co., Weymouth Falls, Digby County. Albany Perforated Wrapping Paper Co., Sheet Harbour (under construction).

Woodworking Industries.—In addition to the saw mills and pulp mills there are in Nova Scotia about 130 establishments dependent on forest material. Several of these produce a variety of articles.

Product	No. of firms
Wooden sailing ships, steamers and boats..	37
Barrels and cooperage..	28
Hardwood flooring, sash and doors..	25
Boxes, shooks, crates, ladders and woodenware..	10
Wagons, carriages and sleighs..	8
Blocks and pulleys..	6
Furniture and cabinet work..	4
Railway cars, mine cars..	4
Skis, toys, lobster traps, clothes pins, hat blocks, shoe lasts, shoe pegwood, dowels and excelsior..	9

The "Trade Index of Canada" for 1923-24 indicates that the following wood products are at present not manufactured in Nova Scotia. Some at least of them should be worth attention;—

Bark-tanned hides, bobbins (wood), canoes, charcoal, clothes hangers (wooden), churns, curtain stretchers, ironing boards, houses (portable), hubs (wooden), pails, panel signs, paper, rakes (wooden), silos, skewers (wooden), stave hubs, office stools, snow shovels, wallboard, whiffle-trees.

(For full details as to commodities manufactured from each kind of wood, and detailed descriptions of the special woodworking industries in Nova Scotia, see "Wood-using industries of the Maritime Provinces," Forestry Branch Bulletin No. 44, by R. G. Lewis and G. H. Boyce.)

Distillation of Hardwoods.—Maple, birch and beech are the hardwoods mostly used for extraction of methyl hydrate (wood alcohol), acetic acid and acetone, and for the accompanying charcoal. Conditions needful for a crude distillation industry, namely, abundant hardwood and coal, water and lime, and also an accessible market for charcoal, are to be found in Nova Scotia. The hardwood distillation plants of Canada are at present confined to Quebec and Ontario, all but two of the twelve being connected with a single organization. Hardwood is also very largely used for fuel especially in the rural districts.

The trees that make up the bulk of the forests in Nova Scotia are:—

RED SPRUCE (*Picea rubra*), confined in Canada to Nova Scotia, New Brunswick and eastern Quebec. This is the principal lumber tree of the province, and is of larger growth in moist and well drained situations. It is stronger and more durable than white spruce and its fine grain, texture and reddish tinge give it special value for interior finish. It is also a valuable pulp species.

WHITE SPRUCE (*Picea canadensis*) (called "cat spruce" in Nova Scotia) is less abundant than the red, but is found in the coastal districts, especially in Yarmouth and Digby counties, and on the Canso side of Guysboro county. In Canada as a whole it is abundant and very widely distributed. Owing to its long, tough, colourless fibre and comparative freedom from resin, it is the most valuable pulpwood species in Canada. The wood is also extensively used for lumber and to some extent for cooperage, mine props, ties, masts and spars.

BLACK SPRUCE (*Picea Mariana*).—In eastern Canada this tree is confined mostly to swamplands. Owing to its comparatively small size it is of less value for lumber than the other spruces, but is largely used for pulp, mine timbers, ties and cooperage.

WHITE PINE (*Pinus strobus*), largely second growth in Nova Scotia, is found mainly in Queens and Shelburne counties. This is the highest priced of the pines. The wood is soft, white and easily worked and, where available, it can be used in every part of building construction and in nearly every wood-using industry.



Great quantities of Nova Scotia Timber are used in her Coal Mines

RED PINE (*Pinus resinosa*) is found in Lunenburg and Queens counties and generally on sandy plains. It is used for lumber, masts, spars and deck plank, and especially for car construction, paving blocks and water tanks.

JACK PINE (*Pinus Banksiana*) not abundant, but occurring on poor sandy soils, especially in Colchester county.

BALSAM FIR (*Abies balsamea*), misnamed "white spruce" in Cape Breton, is found in all parts but especially on Cape Breton Island. It is valuable for pulpwood and for cheaper grades of lumber, but short lived and subject to early rot.

HEMLOCK (*Tsuga canadensis*) is found chiefly in Annapolis county and in the interior of Digby county, forming 60 to 70 per cent of the uncut stands. It is especially suitable for under-water and rough construction and for other purposes in which its coarse and splintery qualities can be disregarded. The bark is a source of tannin.

CEDAR (*Thuja occidentalis*) is native but not abundant. It is used chiefly for fence posts, telephone poles and shingles.

LARCH (*Larix laricina*) called also tamarack, hackmatack and locally "juniper" is found in swamps with black spruce. The wood was, when plentiful, greatly valued for shipknees and trenails, and is well adapted for pumplogs, tanks, and vehicles. The old growth has been destroyed by the sawfly, but young growth is not uncommon.

BEECH (*Fagus grandifolia*), the most abundant of the hardwoods, is more common in the west of Nova Scotia than the east.

MAPLES.—The *Acer saccharum* or sugar maple is the more widespread of the two principal maples found in Nova Scotia. The red maple (*acer rubrum*), also called "soft maple," is less valuable even for lumber. The maples are the most abundant of the hardwoods in the Maritime Provinces next to beech.

YELLOW BIRCH (*Betula lutea*) is the most valuable hardwood in the province, and grows more abundantly in the eastern counties than either beech or maple.

The last three hardwoods are the staple woods for flooring, car construction and furniture.

PAPER BIRCH (*Betula alba*), or white birch, is common on burned-over areas. Besides its traditional use for the birch bark canoe, it is in general use for small woodenware, such as spools, clothes pins, etc.

RED OAK (*Quercus rubra*) is comparatively scarce in the province, but the species could be used in reforestation to advantage; of that in use in the Maritime Provinces 75 per cent is now imported.

BURR OAK (*Quercus macrocarpa*) is the only other commercial species of oak in Nova Scotia. It is hard and tough and useful for axe and pick handles, flooring and interior finish.

POPLAR (*Populus tremuloides*) or aspen is one of the first trees to appear in burned over areas, its light tufted seed being carried long distances by the wind. This variety is used for excelsior, match sticks and berry boxes. Much is also used for pulp, as is the large-toothed poplar (*Populus grandidentata*). The only other native species of poplar in Nova Scotia is the balsam (*Pop. balsamifera*), whose uses are similar to those of aspen.

ASH. The white (*Fraxinus americana*) and black (*Fraxinus nigra*) species are the only varieties in Nova Scotia of the four found in Canada. Neither are at all common at the present time.

WHITE ELM (*Ulmus americana*), BLACK CHERRY (*Prunus Serotina*) and IRONWOOD (*Ostrya virginiana*), also called hornbeam, are native in Nova Scotia, but do not occur in large quantities.

AGRICULTURE

There is abundance of fertile land in Nova Scotia for general farming, and especially for the small holdings which should supply the needs of the larger towns, the manufacturing and mining centres and the summer visitors from the crowded cities of the United States. With the exception of the Annapolis valley, or "Garden of Nova Scotia," and the dyked, or reclaimed, lands which have since 1636 been a feature of the province, there are no wide or continuous stretches of cultivated soil. Nor are there any large rivers with rich and broad valleys, but there are a hundred smaller rivers and streams, the intervals of which give fertile soil in the

slate as in the richer limestone formation. In the seven northern counties, including Cape Breton island, conditions of soil, climate and topography have resulted in a greater proportion of good land and therefore of wider clearings than on the Atlantic slope. In these southern and western counties one of the most fertile intervaleas is that of the Musquodoboit river, the upper branches of which run through a limestone formation. This valley has been opened up by an 80-mile extension of the Canadian National Railways to a point 40 miles east of Halifax. In the slate formation there are rich intervaleas, such as the Tusket valley, between Kemptville and the sea, and the valley of the lower Sissiboo. As a rule, however,



Nova Scotia's Dykelands, famed for Hay and Pasture

the cultivated land in these counties lies along the seaboard, for the interior granite areas do not invite settlement. The uplands of the province with their moist climate and good pasturage provide, according to a report of a Scotch commission, a million acres admirably adapted for sheep ranges. For all young stock the natural grass and clover will continue to be an economic source of feed.

Dykelands.—The greatest gift of the tides to Nova Scotia, whether judged by size, money value or scenic beauty, is the salt marsh country of Acadia. Because of their inexhaustible fertility and the ease with which they can be cultivated, these lands will continue to be the most highly-prized farming districts of the province for many centuries.

There are 15,000 acres in Nova Scotia and 60,000 in New Brunswick. If degenerated by over cropping, bog growth or neglect of drainage, they are easily regenerated; the dykes are broken at convenient places and the tide allowed to flow in at will; the salt water kills bog vegetation at once and in 2 to 3 years covers the entire marsh surface with a thick layer of new mud. The dykes are then rebuilt, ditches are opened,

and the vegetation goes through the usual cycle till in 2 to 4 years the land is again bearing rich English hay.

The marshes were first reclaimed in 1670 and occupied by the Acadian French until 1755. After a period of 5 years, they were resettled. Some dykelands are known positively to have been cultivated for 75 years with no renovation and probably from 100-150 years before that.

Western cattle might well be fattened on those rich pastures and shipped in prime condition to the English market.

Prices of Farm Land.—Occupied farms, including improved and unimproved land, houses and farm buildings, had an estimated value in 1923 for Nova Scotia of \$31 per acre. Prices vary greatly according to location, soil, and nature of use; in 1920 the average prices were as follows:—

In mixed farming counties (Colchester, Cumberland, Pictou, Antigonish, and parts of Hants), cultivated land ran from \$20 to \$100 per acre.

Mature orchards in good bearing \$300 to \$500.

Fruit counties (Annapolis, Kings, Hants), from \$60 to \$200.

Dyked marsh land (Bay of Fundy and Minas Basin), from \$80 to \$300.

Fruit lands in the sand belt, from \$25 to \$40. (Cost of producing bearing trees brings total price up to that of the naturally good land.)

"Intervale" land in any county, from \$30 to \$100.

Pasture land (rough cut-over timber land), \$5 to \$20.

Woodland, \$4 to \$10.

The average price of farm land in Nova Scotia is raised by the large proportion of valuable fruit farms. Improved farms however are still to be had as low as \$20 to \$25 an acre.

The Natural Resources Intelligence Service of the Department of the Interior, Ottawa, publishes "A list of unoccupied and uncultivated lands in the province of Nova Scotia," arranged according to counties with the acreage of each farm and the name and address of the owner. The same service publishes a monograph on Kings and Annapolis counties, entitled "Opportunities for Settlers in the Annapolis and Cornwallis Valleys and other Sections." These publications are mailed free of cost to applicants.

In 1921 there were 47,432 occupied farms with a total acreage of 4,723,550. In 1901 there were 52,491, with acreage 5,260,455. Of these farms all but 5 per cent were under 300 acres, and 68 per cent were under 100 acres.

The Expropriation Act of 1923 enables the Provincial Government to take over lands for the encouragement of farm settlement and for the development of industries.

Pasture, Hay and Roots.—Of the land in agricultural use in the seven southern counties about 60 per cent is pasturage; in the seven northern counties, and also in the four counties of Cape Breton island, 50 per cent.

For beef and dairy cattle and for sheep, hay and roots are essential, and the climate of Nova Scotia has the moisture as well as the sunshine needed for their growth. Clovers, red, alsike and white, grow abundantly,



Banking the Potatoes. Nova Scotia Potatoes find ready markets in New England

and certain varieties of hardy alfalfa are coming into use. The Nova Scotia Agricultural College has experimented with the various alfalfa seeds and find that "Grimm" and "Ontario variegated" passed the test of the severe winter of 1916-17.

Turnips in 1921 on several farms ran 1,200 to 1,400 bushels to the acre, the estimated average of 509 for the province pointing to the value of scientific production. Yarmouth has a reputation for good Swede seed, and at the Dominion Experimental Station at Kentville a small quantity of selected turnip seed is grown. Potatoes are largely grown in the Annapolis valley for export to Havana.

Sheep and Wool.—The sheep industry in the province is about 300 years old, records of 1693 telling of 173,271 sheep in "Acadia." In 1924 Nova Scotia ranked third among the provinces in the number of sheep with 267,913. To the total Canadian wool clip of 15,111,719 pounds Nova Scotia contributed 1,514,476 pounds. The price for Canada was 25 cents a pound (unwashed) as compared with 60 cents in 1918 and 1919. The price for Nova Scotia wool is always above but the clip per sheep is usually less than the average. All the coarse wool large breeds, such as Leicesters, Lincolns and Cotswolds, do well in Nova Scotia, and also the medium wool breeds, such as Hampshire, Cheviot, Shropshire and Southdown. The climate on the mainland demands shelter for sheep for the winter months, though on certain islands along the south shore they are out all the year and feed on the sea kelp washed up on the shore. These were at first the wild sheep descended from those brought in by early settlers. Enterprising farmers on the south shore, seeing that they fed off kelp in winter as cattle do in Alaska, use nearby islands as sheep corrals. In Nova Scotia, so far, small flocks of from 15 to 75 have been the rule, but with the million acres of good pasturage available, often with white clover growing naturally, the tendency is to put the industry on a wider basis. With a view to improve the breed of sheep, the Dominion and Provincial Governments co-operate to provide for the farmer young ewes and rams of selected stock at prices little higher than those paid by the butcher. In 1923 six pedigree rams were imported from Britain at a cost of about \$200 each, one-half of the expense being paid by the new owners and one-half by the Dominion Government. Nearly 35 per cent of the sheep are found in the three neighbouring counties of Inverness, Antigonish and Pictou. Recent legislation imposes a tax on dogs and provides compensation by the owner of the dog or by the municipality for loss of sheep injured by dogs. Two annual payments of \$5 are made to any sheep owner with a ewe flock of ten or more who purchases a pure-bred lamb for the first time. Co-operative marketing of sheep and lambs under the auspices of the Live Stock Branch of the Dominion Department of Agriculture has considerably increased the farmers' profit. Grading of pure-bred rams has also been welcomed.

The Co-operative Wool Growers.—In 1911 the sheep Commission appointed by the Minister of Agriculture regretfully reported that "from shearing to marketing no country in the world handles its wool in a worse manner than Canada." This is not so to-day. Dominion wool is now intelligently sheared, packed and sorted. In 1923 Canadian wool was for the first time successfully marketed in England.

In 1914 the Sheep Division of the Agricultural Department was organized and, throughout the Dominion, Wool Growers' Associations were formed to produce, classify and market good wool. In 1918 the Co-operative Wool Growers, Ltd., was incorporated, with head offices and large warehouses in Ontario. This is a growers' organization, owned and controlled by the sheepmen, to which are affiliated most of the Wool Growers' Associations. Of these there are several in Nova Scotia with grading stations at Truro, Antigonish, Port Hood and elsewhere.



Nova Scotia takes a well-merited pride in her Farm Horses

Pure-Bred Live Stock.—Provision is made by the Dominion Government for the supply of pure-bred sires in cattle, sheep and swine to associations of ten or more farmers who unite and comply with a few simple regulations. (In all Canada there are about 2,000 such associations, in Nova Scotia 29.) The increase of such associations has improved the breeds of live stock in certain districts where they had shown a tendency to deteriorate. Pure-bred cattle increased from a percentage of 8.05 per 1,000 head in 1911 to 19.52 in 1921.

Horses.—With the coming of the "car," light horses in Nova Scotia are not so much in request, but draught and delivery horses are much needed in the cities. In Nova Scotia much is being done to improve the heavy breeds, such as Clydesdales and Percherons.

In 1924 there were 52,961 horses and not enough being bred to keep up the supply. An Act of 1913 provides that every stallion offered for service in the province must be enrolled with the Department of Agriculture. In 1921 there were 432 pure-bred horses compared with 359 in 1911. In 1924 pure-bred stallions enrolled numbered 34.

Cattle.—Beef and dairy stock in Nova Scotia amounted in 1924 to 284,748 head, so that there is room for a very large increase. For beef, Herefords, Angus and Devons all do well; for dairy purposes, Jersey and Guernsey, Ayrshire, Shorthorns and Holstein.

At present there are no abattoirs in the Maritime Provinces. To say nothing of local consumption, a fair amount of live stock for export would probably be available if there were abattoirs, and abattoirs would probably be built if cold storage facilities were adequate.

Hogs.—Nova Scotia ranks seventh among the provinces in swine and only 14.64 per 1,000 in 1921 were pure-bred. As a consumer of the separated milk returned from the creameries and of garbage otherwise wasted, the hog is a money-maker all the time.

THE DAIRY INDUSTRY

DAIRYING

Dairying can be indefinitely extended. In 1911 there were 152,000 cows, producing, on the average, 3,300 pounds of milk; in 1922, 143,780, producing 4,055 pounds. In 1924 the milch cows numbered 132,783.

In 1911 there were ten creameries producing 320,763 pounds of butter; in 1924, 27 producing 4,094,282 pounds. Three of the creameries are operated by the Provincial Government. In 1918, 68 per cent of the butter was home-made, but the patrons of the creameries increase yearly.

Cheesemaking has decreased almost to the vanishing point, owing in part to the far larger consumption of ice-cream and milk. In 1923 the production was 34,382 pounds, with only one factory (Malagash) producing cheese.

The Government railways provide a weekly refrigerator car service for butter, of which shippers can forward any amount from a one-pound package up, being guaranteed a certain proportion of the carload value. The butter must be inspected at Halifax.

With the growth of co-operative ideas and knowledge of up-to-date methods, admirably fostered by the work of the Nova Scotia Department of Agriculture, the province should be able not only to supply its own demands and contribute to those of the Dominion, but to ship in larger quantity to Britain, which consumes yearly five hundred million pounds of imported butter. Before the war, weekly train loads of butter were collected in Siberia, sent by rail to Riga, and thence by water to England, where it was sold as Danish butter. Nova Scotia can well take the place of Siberia. In 1924 a Nova Scotia Holstein made a world's new record for a 3-day public test of milking (262.9 pounds).

Cold Storage.—Government officials are now surveying the situation in reference to the provision of a public cold storage plant at Halifax. Cold storage facilities at harbours and on ships are a first need in view of the expansion of the trade with Europe in butter and eggs, fruit and other perishable products.

Poultry and Eggs.—Here again the demand is far greater than the supply. One of the difficulties has been the cost of feed, now mostly imported into the province at more than double the cost of a few years

ago. The manufacture of poultry food from fish waste would do much to help, and the Poultry Department has aided in supplying buckwheat seed for any spare land the householder may have. Co-operative Egg Circles collect the eggs and market them at top prices. In one case four circles collected 15,000 dozen eggs, stored them in tanks containing water-glass, the Government supplying the tanks; \$1,500 was thus added to the profits. The industry is also aided by poultry clubs and shows and by the erection of demonstration houses at various points as models for the poultry-keeper. A report of the Agricultural Department gives a detailed record of a profit of \$513.09 on an outlay of \$580.76. The production of eggs in 1924 was 4,042,344 dozen, valued at \$848,892, Nova Scotia ranking last but one among the provinces.

NUMBER OF LIVE STOCK IN 1924

Horses..	51,961
Milch cows..	132,683
Other cattle..	152,965
Sheep and lambs..	267,193
Swine..	53,480
Poultry..	936,930

Live Stock Prices

	1919	1923
Horses..	\$127	\$96
Milch cows..	76	44
Other cattle..	54	28
Sheep..	11	6
Swine..	29	16

BEEES

The honey now made in Nova Scotia is not beyond the demand of the local markets, but there is no reason why the abundant native flora, fireweed, clover, etc., to say nothing of sown crops such as buckwheat and the blossoms of all varieties of fruit, should not produce a yield for export to the unlimited market outside. The advice of the Government specialist can be had for the asking. In parts of the Annapolis valley and in Cumberland county bee-keeping is already an industry; to ensure pollination bees are a necessity to the orchardist. The industry requires little capital, and should prove in Nova Scotia as profitable as it now is in Quebec. The yield of surplus honey in six years from the Nappan Experimental Station was exceeded only by that from Ottawa. The yield at Nappan in 1923 was 114 pounds to each colony. In 1920, 6,000 stands in the province were reported.

Maple Sugar.—Though 90 per cent of the Canadian production is credited to Quebec, it is not the absence of sugar maple trees that is to blame for the very small production in Nova Scotia.

FIELD CROPS

The Dominion Minister of Agriculture stated in the House of Commons on March 27, 1918, that Nova Scotia was going to produce enough wheat and coarse grain to supply its demand, whereas every other year it had imported. The 1918 report of the Nova Scotia Secretary for Agri-

culture stated that the wheat area had doubled since the outbreak of the war. The report for 1924 shows a return to the normal acreage of wheat, and other crops.

AREA, YIELD AND VALUE OF PRINCIPAL FIELD CROPS OF
NOVA SCOTIA 1924

Crop	Acreage	Yield per acre	Average price total yield	Total value
Wheat.....	9,236	18.1	\$ 1.68	\$ 289,000
Oats.....	115,771	33.3	0.73	2,772,000
Barley.....	7,122	26.1	1.00	181,000
Rye.....	189	18.6	1.28	4,000
Peas.....	517	19.3	2.22	24,000
Beans.....	1,565	19.2	3.50	91,000
Buckwheat.....	7,338	22.8	1.00	174,000
Mixed Grains.....	3,548	32.1	1.00	124,000
Potatoes.....	29,052	107.1	0.60	1,867,000
Turnips, Mangolds, etc.....	12,643	234.4	0.50	1,482,000
Hay and Clover.....	510,017	1.58	11.75	9,494,000
Fodder corn.....	1,015	7.30	5.00	37,000
Totals.....	698,013			\$16,539,000
Apples, 1,516,423 barrels				3,186,855

(There are 1,062,963 acres in pasture other than in hay and clover.)

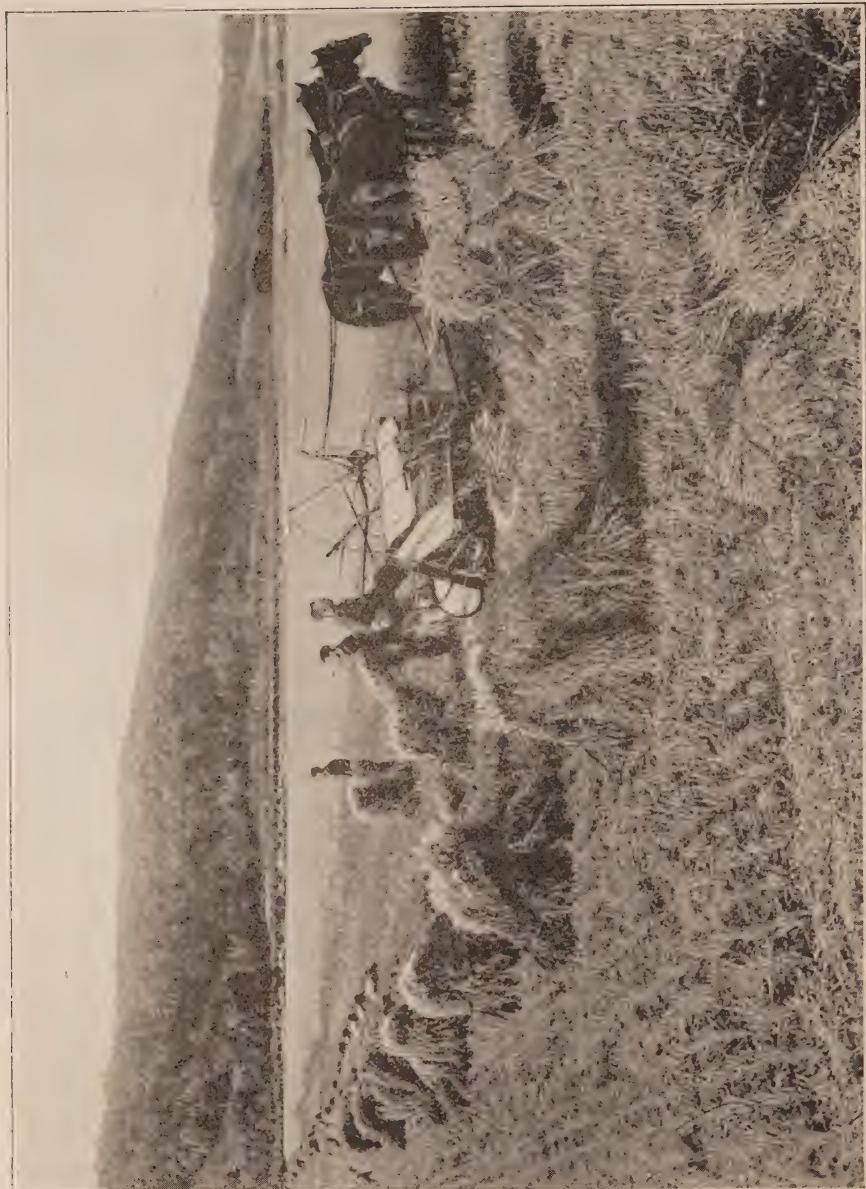
It is interesting to compare the above figures with those of the chief crops in 1919:—

Crop	Acreage	Yield	Value
Wheat.....	28,931	564,000 bush.	\$ 1,585,000
Oats.....	158,838	5,718,000 "	6,519,000
Barley.....	13,894	434,000 "	768,000
Rye.....	1,046	31,000 "	48,000
Peas.....	1,896	38,000 "	146,000
Beans.....	6,859	87,000 "	554,000
Buckwheat.....	17,384	439,000 "	680,000
Potatoes.....	62,060	5,995,000 cwt.	10,891,000
Turnips and Mangolds.....	30,291	8,144,000 "	9,773,000
Hay and Clover.....	678,357	1,425,000 tons	31,835,000
Fodder corn.....	2,960	28,000 "	224,000
Mixed grains.....	8,628	218,000 bush.	334,000
Totals.....	1,011,144		\$63,357,000

The comparison shows that since the peak year 1919, the acreage decreased 30.7 per cent and the value of the crops 74 per cent.

Flax for Fibre.—The climatic conditions needful for the growing of flax are a long and moderately warm growing season that is not liable to drought, and a considerable amount of moisture in the air. The parts of the Dominion most nearly fitting these needs are British Columbia, southwestern Ontario, the parts of Quebec lying near the St. Lawrence, and the Maritime Provinces generally. Any soil that will produce a good crop of oats is suitable. An acre of flax should produce nine bushels of seed and two tons of straw. The fibre flax plants must be pulled up by the roots. This being a slow method when done by hand, as in Europe, the Dominion Department of Agriculture has developed a machine to "pull"

The Oat Crop of Nova Scotia averages Five Million Bushels a year



four to six acres a day. The subsequent processes of "deseeding," "breaking" the covering of the fibre, "scutching," "retting" by warm water in tanks to meet Canadian conditions, and combing the tow for market are all to be seen in the newly rebuilt model factory at the Experimental Farm, Ottawa.

Before the war such flax as was grown in Canada was used commercially for linseed only, but the extraordinary demand for linen made the fibre more important. Whereas in Ontario the flax area was 4,000 acres, it rose in 1920 to 31,000, and both in Ontario and in Quebec linen mills are operated.



Results of Scientific Cultivation at Kentville

In 1766, Lieutenant-Governor Franklin stirred the jealousy of British manufacturers by telling Lord Shelburne that "the townships of Truro, Onslow and Londonderry, consisting in the whole of 694 men, women, and children, composed of people chiefly from the north of Ireland, make all their linen and even some little to spare to the neighbouring towns. This year they raised 7,524 pounds of flax which will probably be worked up in their several families during the war." The report of the Nova Scotia Agricultural College for 1921 states that flax could be grown commercially at a profit in Nova Scotia if mills were established within reach of the grower but not till then. As a home industry, however, it might well be revived, especially in view of a demonstration mill being installed at Kentville. Fibre flax is grown at the Kentville and Nappan Farms, and the product of 1923 from Kentville was officially described as "of an

exceptionally good spinning quality and very similar to the best grades of Irish."

EXPERIMENTAL FARMS AND ILLUSTRATION STATIONS

Experimental Farms are maintained by the Dominion Government at Nappan in Cumberland county and at Kentville in Kings. The Nappan farm is one of the first four experimental farms established by the Act of 1886.

The Kentville farm was originated by the Nova Scotia Fruit Growers' Association of the Annapolis valley, and was taken over by the Dominion Department of Agriculture in 1911. This farm covers about 450 acres and includes orchards with 500 varieties of fruit trees, arable land for roots and cereals, dyked lands, pasture and woods, with buildings suitable for live stock, dairy, poultry and beekeeping.

Here and at Nappan everything is provided for scientific agricultural experiments and to give practical aid free of cost to the inhabitants of the province in fruit and general farming.

Illustration Stations are operated, under the advice of a division of the Central Experimental Farm at Ottawa, at fifteen points in Nova Scotia:—

Yarmouth, Yarmouth County.....	Operator, Dr. I. M. Lovett
Belliveau Cove, Digby County.....	" Adolphe Belliveau
Upper Granville, Annapolis County.....	" J. G. Campbell
Newport, Hants County.....	" Chas. Zwicker
Kennetcook, Hants County.....	" Willard Ettinger
Middle Musquodoboit, Halifax County.....	" R. B. McCurdy
New Glasgow, Pictou County.....	" Geo. P. Fraser
Tatamagouche, Colchester County.....	" G. B. Clark
Heatherton, Antigonish County.....	" D. W. Grant
Mabou, Inverness County.....	" Duncan Boyle
Sydney River, Cape Breton County.....	" M. P. Moreshead
Christmas Island, Cape Breton County.....	" J. A. McNeil
N. E. Margaree, Inverness County.....	" Thos. E. Ross
Big Baddeck, Victoria County.....	" J. A. Kiley
Middle River, Victoria County.....	" Forbes McDonald

The existence of these Illustration Stations should be of great value to any settler in the neighbourhood, and new arrivals intending to farm would do well to get in touch with the owners.

Federal Appropriation.—Under the Agricultural Instruction Act of 1913 the province of Nova Scotia, until 1923, received about \$80,000 from the Dominion Government, which is equivalent to about 40 per cent of the total annual expenditure of the Provincial Department of Agriculture. The Act of 1923 not being effective after March, 1923, a special appropriation of \$61,783 for 1923-24 was made by the Dominion Government. The appropriations from this fund in 1923 were as follows:—

Truro College of Agriculture, Science Building, etc.	\$ 7,000
Salaries and maintenance.	23,000
Short courses.	1,350
Dairying.	4,200
Poultry.	200
Drainage, soils and fertilizer.	1,700
Fruit growing.	600
Women's work.	5,000
Entomological work.	5,500
Elementary agricultural instruction.	8,000
Agricultural representatives.	5,000
Contingencies.	233
	\$61,783

Under the Act of 1864 for Encouragement of Agriculture, Agricultural Societies increased in number every year (except 1919) for 58 years up to a maximum of 272 in 1920. There are now 215, with a membership of 7,079, that have qualified for sharing the grant of \$17,000.



Farm Buildings in one of Nova Scotia's Modern Farms

FRUIT FARMING

The Apple.—Apple orchards in Nova Scotia are what orange and lemon groves are in California—a staple industry known far and wide and a lodestone to attract desirable settlers. At present the Annapolis valley and the Cornwallis valley, an extension of this, are considered the most suitable region for apple growing, but the Provincial Government in 1901-3 set out thirty-seven model orchards of one or two acres in various spots, and have shown by practical experiment that other parts, especially of western Nova Scotia, are likely to claim attention. The first model orchard was set out in 1901, and in 1921 produced 160 barrels an acre. A profitable crop is estimated at 100 barrels an acre for a full grown orchard. The danger in certain districts lies in late spring frosts and in unusually severe winters.

The French introduced the apple in 1633. From 20,000 barrels in 1880 the pack increased to the present record of 2,033,901 barrels in 1921. As the citrus fruit industry in Florida and California grows and grows in spite of an occasional year of killing frost, Nova Scotia can well afford on rare occasions to lose a percentage of its crop in a windstorm. In "off years" the pack may be cut in half.

Nova Scotia as a province has won the gold medal of the Royal Horticultural Society for apples in competition with other parts of the Empire. In 1924, at the Imperial Fruit Show, the province took 3 gold and 5 silver medals.

The Annapolis Valley—"The Garden of Nova Scotia"—stretches for seventy miles from the head of Annapolis basin to the bay of Minas with a varying width of from 10 to 15 miles. The North Mountain lying along the Bay of Fundy from Cape Blomidon southwest to Brier island forms a barrier that shelters it from the Northwest winds and fogs, and parallel to this is the South Mountain on the other side of the valley. Of the enclosed valley area only about one-tenth is under cultivation. The price of land varies from \$60 per acre to \$200 for a six-year-old orchard



The Apple Orchards of Annapolis Valley in blossom time are one of the most beautiful sights in Canada

and \$1,000 for one in full bearing. As in other parts first settled by the French, the farms are usually in narrow strips of from 20 to 120 acres, having meadow hay land in the bottom, orchard land midway, pasture and wood above. About 40,000 acres are now set out in apples.

A full-bearing orchard of ten acres should provide ample work for a settler and a fair living, but adjoining land for mixed farming is a comforting possession in an "off year." Even in the special fruit-growing areas mixed farming is recommended as an adjunct to the orchard, for, though it is possible to maintain fertility by the ploughing under of green crops and by commercial fertilizers, real stability is best obtained by catch crops, such as potatoes, beans, roots or flax. Farmers with the live stock necessary to keep the land in good shape for such crops weather best a lean fruit year and have, also, the more fertile soil.

Details of the fruit industry and of land available or for sale may be obtained from the secretaries of the Board of Trade at various centres in the valley, such as Annapolis Royal, Middleton, Kentville and Canning.

The cost of setting out an orchard and taking care of it until it becomes profitable depends on many variable factors. The size of the orchard and the nature of the soil, the capital spent in farm equipment and buildings, the market for vegetables and berries grown between rows, the live stock kept, the need and cost of commercial fertilizer—and above all in importance the amount of work done by the owner and his family and the personal equation of energy and thrift—all these points enter into costs. Experience, local knowledge, and disinterested advice alone give assurance.



A few of the Barrels of Apples which Nova Scotia ships

The man who purposed to be an apple grower would be wise to work for a time as a hired man with owners of orchards, and not to lay out equipment in the dark, except he prefers as many do to "buy experience."

The case is different where an intending grower has a capital of \$15,000 to \$20,000, wherewith to buy a paying orchard and a home outright. It then becomes a matter of attraction to a particular property and neighbourhood, of observation how the orchard farm has been cared for, and a careful examination of the vendor's certified account books. When he has bought the property it depends on the buyer whether it will deteriorate, or become more profitable than before. The beauty of a home place lovingly cared for bears little or no relation to its size, cost or pretensions, and, apart from the ethical influence on the owner and his family, charm is a growing factor of capital value.

Cranberries.—The crop from bogs near Auburn in King's county has of late years averaged 5,000 barrels.

Canada in 1924 imported 25,727 barrels, valued at \$220,013, and paying a duty of \$55,003. The cranberry bogs sparsely scattered in Nova Scotia, Prince Edward Island, Quebec, and British Columbia do not meet the home demand. Plantation of another 500 acres on peaty land,

otherwise useless, might well be profitable considering the protective duty of 25 cents *ad valorem* and the distance from Cape Cod, Massachusetts, where the imported berries are now grown. The fortunate possessor of a cranberry bog can get a yield of from 50 to 60 barrels an acre, and sell them for \$10 a barrel to satisfy the appetite at the Thanksgiving and Christmas seasons.

Blueberries.—Nova Scotia is suited for a large production of high-bush blueberries for which the market demand in the New England towns is great. A plan is on foot with the approval of the Provincial Government to burn tracts of land near Yarmouth so as to rid them of the rank



Picking Cherries. Fruit in abundance besides the apple is grown in Nova Scotia shrubs that have destroyed the blueberry bushes on hundreds of square miles. Canada imported \$13,393 worth of wild berries in 1923, of which the largest part was wild blueberries.

Cultivated Blueberries in New Jersey are recorded as selling at 50 cents a quart wholesale in 1924, when the wild variety were selling at 25 cents. The average price since the industry began in 1916 has been \$10 a 32-quart crate. One $2\frac{1}{2}$ -acre plantation secured 1,920 quarts per acre after three years growth, showing a return of \$500 per acre after allowing 10 per cent commission and 2 cents a quart express charges. Mature bushes should produce double the above yield. An acid soil of peat and sand, so drained as to hold the water at 18 inches below the surface, 400 pounds per acre of commercial fertilizer, and regular cultivation are important. Spraying is unnecessary.

Other Fruits.—The summer temperature is low for peaches and grapes on a commercial scale, but pears, plums and cherries grow and ripen well. Bear river cherries were once famous, and could well live up to their name.

As profits of \$200 and more an acre have been taken for the sale of strawberries and raspberries, the output for 1923 of 125,000 quarts and 33,081 respectively seems very small. There are 513 acres in small fruits. Jam factories to supplement the one already established on a small scale are needed.

The United Fruit Company of Nova Scotia embraces forty Co-operative Fruit Companies and does most necessary work in marketing and regulating shipments, and in buying fertilizer and implements wholesale. The marketing, packing and grading of apples is regulated by Act 8-9 George V.

Medicinal Plants.—There are many plants in Nova Scotia, as elsewhere, whose leaves, roots, seeds or fruit are of commercial value when properly dried. Among the commonest of these are bloodroot, wintergreen, tansy, horehound, caraway, yellow lady's slipper, balm of gilead, spearmint and peppermint. Lists of such plants, with instructions on collecting and drying, are to be found in "Medicinal Plants and their Cultivation in Canada," by J. Adams, Experimental Farm Bulletin No. 23, Department of Agriculture, Ottawa.

Evaporated Fruits and Vegetables.—Dehydration has made an immense advance since it became a question of feeding armies. Potatoes and onions have been dried by the million tons and apples in proportion. Nowhere in Canada can fruit be properly sun-dried and so far the apple is the only fruit that has been artificially dried on any large scale.

(Bulletin No. 24 on "Evaporated Apples" issued by the Department of Agriculture contains plans and illustrations of the plant and machinery used in the industry.)

An Act of Parliament and an Order in Council of March, 1916, ensure proper inspection and standardization, so that home and foreign buyers can now buy with confidence.

Considering the lightness for transport of dried fruit and vegetables as compared with the natural or canned article and the immunity from all danger of ptomaine poisoning, it may be taken as certain that the dehydrating process will develop rapidly and be extended more widely to all kinds of fruit and vegetables, pears, peaches, berries, corn, peas, beans, turnips, carrots, spinach, etc., and will be a means of saving to best advantage the enormous mass of ripe fruit and vegetables now not marketed. Carefully studied plans for dehydration equipment suitable to a community of growers have (1923) been put into practice by the Department of Agriculture, Ottawa, to which inquiries should be addressed.

The United Fruit companies of Nova Scotia operate a factory at Aylesford for canning and dehydrating apples, but the field for a greater saving of fruits and vegetables is not yet covered.

Fertilizers.—The attention of farmers living by the coast may be drawn to the valuable supply of fertilizer in the seaweed and fish waste now neglected or thrown away, which could be either hauled direct to the field and there ploughed in or be made into a compost or otherwise treated. Still more strongly are all Nova Scotia farmers urged to make use of the large limestone deposits in the province. The chemist of the Agricultural



Nova Scotia Strawberries. Picking for markets that never cry "Enough"

College states that "95 per cent of the soils of Nova Scotia require more or less heavy applications of lime," varying from 2 to 8 tons per acre. "Nova Scotia," he says, "is only one small area of the agricultural world which has come to the conclusion that the trio, limestone, properly cared for manure, and wisely selected commercial fertilizers, must go hand in hand, if we are to have good farms." Of the three chemical ingredients necessary besides lime for crop growth, namely, nitrogen, phosphorus and potash, the first two in the form of sulphate of ammonia and basic slag are large by-products of the Nova Scotia Steel Industry, but are exported to the British West Indies and elsewhere, and are without honour in their own country. The use of lime was for a time discredited owing to the injudicious application of burnt lime, but finely ground limestone is now rightly in vogue as being "fool-proof," less costly than burnt lime and more convenient to handle. To facilitate its use the Government pays till Sept. 30, 1925, one-half of the freight charges up to \$1 per ton and in 1924 operated two portable crushers in Nova Scotia. From central points, such as Point Edward near Sydney, where 125,000 tons of 85 per cent already broken limestone are available, New Glasgow, Windsor and some point in Cumberland County, the farmer should be supplied with crushed limestone at \$2 a ton f.o.b. Large pulverizing plants are already established at Windsor (Hants) and Iron Ore (Pictou).

Eel Grass.—This species of seaweed, of which large amounts are found along the shores of Nova Scotia, is used as stuffing for upholstery and for sheets of a non-inflammable insulating material.

FUR FARMING

The world market demand for fur increases yearly, and, as the limits of the fur-bearing regions narrow, will have to be more and more supplied from domesticated breeds. The price of \$2,900 for a silver fox pelt or \$35,000 for a breeding pair may not recur, but, seeing that North America produces about one-quarter of the one hundred million dollars worth of the world's marketed supply, the future of fur farming is assured.

In Nova Scotia the industry is by now well established under proper regulations by the Commissioner of Forests and Game without whose permit no fur farming is allowed. Research into fox pathology, cause and cure of disease, right feeding, etc., is the work of experts in the Dominion Department of Agriculture, and readily available for the farmers use.

The conditions needed for a successful fox ranch are humidity, a sheltered area, a woodland of birch, spruce, fir and cedar, a ground covering of heath and shrubs like the blueberry, a climate cool in summer but cold enough in winter to produce heavy fur and over-hair, and a soil with hardpan to prevent burrowing. Such conditions are common in Nova Scotia.

At the end of 1923 there were in the province 2,134 fur-breeding animals in captivity including 1,861 silver foxes, 123 fox farms, 6 mink, 4 raccoon, 3 beaver, and 1 muskrat farm. The value of the pelts bred on these farms and sold in 1923 was \$69,000. In 1924 the total of pelts sold by both fur farmers and trappers was 55,582 valued at \$266,935.

It is well to bear in mind that fashions change and at any time Bond street, Fifth avenue and Paris may tire of silver fox and issue its ukase for some other expensive fur. Thus otter, fisher and marten may be the vogue, and now that the easily-descended skunk has no longer need to pose as "black marten" or "Alaska Sable," the 60 skunk farms once to be found in Nova Scotia may well reappear.

Especially suitable to Nova Scotia and its sheep districts, though the stock is hard to obtain, is the Karakul sheep, which supplies the fur market with "Persian lamb" or "Astrakhan." This was the first animal bred for fur. Though the export of Karakul is now forbidden from Russia or Bokhara, or was in the times of Czardom, the strain in North America is still kept up from stock imported to Texas in 1908 and 1912. Karakules were raised in Nova Scotia from 1914 to 1922, and it has been found that the crossing of the Karakul with the coarser-haired breeds of sheep, such as Lincolns and Cotswolds, frequently produces a good Persian lamb fur.

WATER-POWERS

Though it rendered large tracts of country unfit for use, by converting them into shallow lakes or morasses, the ice of the glacial period compensated somewhat by directing the streams over ledges and thus developing hundreds of water power sites. The possibilities of this water power are just beginning to be discovered.

During the past few years it has been demonstrated that the province of Nova Scotia has dependable water-power resources of a magnitude previously quite unrealized. The Dominion Water Power Branch, Department of the Interior, Ottawa, co-operating with the local authorities, is carrying on careful investigations involving both the actual measurement of water supply from day to day in the more important streams of the province and the advantages of individual power sites. Moreover, the actual construction and operation of hydro-electric developments by the Nova Scotia Power Commission has demonstrated that these investigations are to be relied upon.

It is now certain that, besides an abundance of small power sites ideal for purely local purposes, Nova Scotia has many other sites which from their location, distribution and size are well suited to meet the immediate and prospective industrial needs of the country. The large precipitation throughout all parts of the province, with its even geographical distribution, the innumerable lakes available for storage purposes, and the proximity of the larger power sites to deep sea harbours, are distinct advantages. It is exceedingly fortunate that there are a number of power sites which are large enough to secure maximum economy in construction and operation and yet not too large for existing and growing power demands. A proper balance may at all times be maintained between capital expenditure and revenue.

At the present time the commercial capacity of the known and investigated sites in Nova Scotia is about 300,000 horse-power. Of this amount 260,000 horse-power comprises sites of over 1,000 horse-power capacity. As compared with figures given for some other provinces and countries this may not appear large, but it should be remembered that all sites in

Nova Scotia are readily accessible and within economic transmission distance of well settled territory. At the present time the total hydraulic development in Nova Scotia is actually about 47,000 horse-power, so that there is a large field for development. Information concerning some of the larger sites in the province is given herewith:—

River	Commercial capacity h.-p.	Remarks
Sissiboo, two sites.....	6,800	3,000 h.-p. installed
Bear River, five sites.....	17,000	
Lequille.....	4,400	245 "
Nictaux, two sites.....	6,300	400 "
Paradise Brook.....	6,000	
Gaspereau, two sites.....	18,700	580 "
Forks (Avon R.), S. Branch, two sites.....	5,000	2,200 "
Fall, two sites.....	1,200	
East River, Pictou, three sites.....	1,800	
Tusket River, nine sites.....	16,000	350 "
Liverpool, eight sites.....	80,000	7,190 "
Petite Riviere, three sites.....	1,150	600 "
Medway, twelve sites.....	29,000	4,195 "
La Have, eight sites.....	15,000	2,990 "
Mushamush, three sites.....	2,700	800 "
Gold, four sites.....	5,600	
North East and Indian.....	12,500	10,700 "
Sackville.....	1,900	
Tangier, two sites.....	6,400	300 "
East River, Sheet Harbour.....	15,000	12,000 "
West River, Sheet Harbour.....	2,200	
Liscomb, two sites.....	6,000	500 "
Lake Ainslie.....	7,500	
St. Croix.....	7,750	

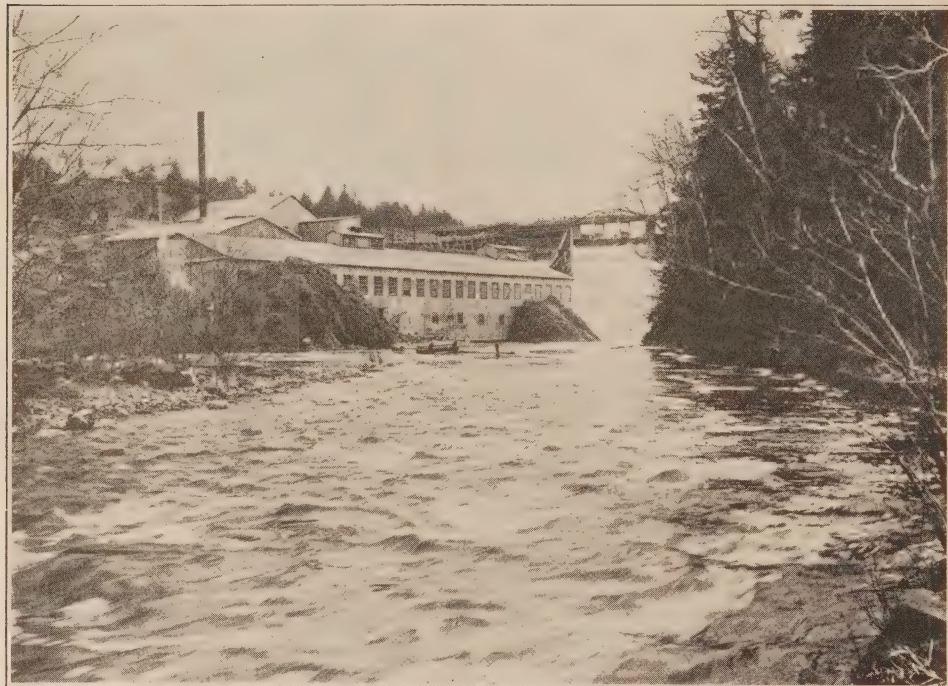
It should be noted that for the same average continuous water supply the capacity of the machinery installed varies with the purpose for which power is used. The figures given are on a conservative basis. For example, to fully utilize the water supply of the North East and Indian rivers under load conditions realized with the existing uncompleted development, machinery with a total capacity of about 15,000 horse-power will have to be installed, although the capacity of these rivers as given in the table is 12,500 horse-power.

Having ascertained beyond any doubt that the province has very considerable water-power resources, the local authorities have taken active steps to facilitate their development. The general administration of all water resources in the province is in the hands of the Minister of Public Works and Mines, by virtue of the Nova Scotia Water Act of 1919. This Act is administered with the idea of assisting in securing water rights to those who may desire to develop the same and at the same time ensure that power sites are developed to their fullest economic capacity. In addition, the Nova Scotia Power Commission has been organized under suitable legislation to actually carry out developments by public enterprise where development by such method seems desirable.

Within the past few years, the Power Commission has completed and is now operating developments at St. Margaret's Bay, at Sheet Harbour and on the Mushamush river in Lunenburg county.

The St. Margaret's Bay development, with a present installation in two generating stations of about 11,000 horse-power and a proposed ultimate installation of about 15,000 horse-power, is now supplying all the electrical requirements of the city of Halifax, the largest city and the capital city of the province, and its environments.

The Sheet Harbour development, with a present installation of about 12,000 horse-power in two generating stations and a proposed ultimate installation of about 20,000 horse-power in three generating stations, is meeting all the electrical requirements of the Pictou county industrial



Pulp on Sissiboo River. The commercial capacity of known and investigated water-power sites in Nova Scotia is 300,000 horse-power

area, including New Glasgow, Trenton, Stellarton, Westville, and Pictou, as well as furnishing energy to the Sheet Harbour district itself, including a large pulp industry. Extensions of the Sheet Harbour system to Truro and Antigonish are now under consideration.

The development on the Mushamush river, while much smaller than those already mentioned, having an installation of about 800 horse-power, is no less efficient nor of any less importance from the standpoint of meeting the requirements of the district. It supplies Lunenburg, Riverport, La-Have and adjacent territory.

Additional developments are now under consideration on the Bear river which has an ultimate capacity of 17,000 horse-power, and on the St. Croix river which has an ultimate capacity of about 8,000 horse-power. In so far as the Power Commission is concerned, it stands ready to furnish information to municipalities or others with regard to the cost of power, and, if such information be satisfactory, to actually carry out developments on a co-operative basis.

Many of the smaller towns of the province have been supplying themselves with hydro-electric energy for some years past. With such developments and those more recently completed or contemplated as outlined, the more pressing power needs of the province of Nova Scotia will be met in a satisfactory manner and at rates comparable with power rates elsewhere. At the same time the foundation of network of transmission lines ultimately supplying all the more populous centres of the province, including the chief rural communities, will have been laid. The increasing use of air-compressors driven by hydro-electric power will be, as now in Europe, of economic advantage to coal mining.



La Have River, Lunenburg County, one of Nova Scotia's power-producing waterways

TIDES

Digby Gut.—Perhaps some day the tidal flow through Digby Gut may be utilised for hydro-electric power. On each tide over 21,000,000,000 cubic feet of water runs in and out of this gateway which at the narrowest point is about 100 yards wide. The velocity is 5 miles per hour at half tide and the current is believed to be as strong at the bottom as at the surface. The rise of the tide at the gut is about $27\frac{1}{2}$ feet.

IMMIGRATION

It is noticeable that in 1921 only 8.31 per cent of the present population were classified as "foreign born," and that of these all but 1.33 per cent were of kindred stock from Great Britain and the United States of America. The waves of immigrants to Canada, gathering force since the battle of Waterloo, swept westward and carried with them many Nova Scotians heading for the newly-formed provinces; but Nova Scotians are realizing that, as good homestead land in the West, near to a railroad, is no longer abundant, the chances are as good in their native land.

The following are the figures for immigration into Nova Scotia for the year ending March 31, 1924:

England	712	Newfoundland	3,743
Scotland	251	Other British possessions	10
Ireland	129	France	22
Wales	29	Norway, Sweden and Denmark	106
Total British	1,121	Other European countries	561
		Asiatic countries	43
		U.S.A.	333
		Other countries	8
		Total	5,947

In the increase of immigration to Canada as a whole, Nova Scotia may be expected to have a fuller share than before of the incomers whose selection is more than ever a matter of care to the Federal Government. Resumption of industrial activity, resulting in certainty of employment in mines and factories, will create a stronger local market for agricultural produce, and make it necessary to increase the area of cultivation and the number of men on the land. That desirable immigrants can and will be obtained in sufficient numbers admits of no doubt. Whether they will make a permanent home in the province depends much on well thought out plans of settlement now being formulated.

Immigration Regulations.—The intending settler will judge by the following extracts from immigration regulations and acts amended to April 14, 1923, that the Dominion is careful to safeguard the quality of its inhabitants and to keep at a distance undesirable or burdensome units.

Deportation.—Any person other than a Canadian citizen or person having Canadian domicile who within a certain period from time of landing has been convicted of a criminal offence in Canada or who has become a public charge or who is proved to be otherwise undesirable may be deported with all dependent members of his family at the cost of the steamship and railway company that brought him to Canada.

Entry is forbidden to those not of sound mind, criminals, prostitutes and beggars, to those likely to become a public charge, to those suffering from any disease likely to prove injurious to the public health, to anarchists, conspirators, etc.

An Order in Council (P.C. 183) of January 31, 1923, "having regard to unemployment now existing in Canada" prohibited the landing in Canada "of immigrants of all classes and occupation" except—

- (a) *bona fide* agriculturists entering Canada to farm and having sufficient means to begin farming;
- (b) *bona fide* farm labourers entering Canada to follow that occupation and having reasonable assurance of employment;
- (c) female domestic servants entering Canada to follow that occupation and having reasonable assurance of employment;
- (d) the wife or child under 18 years of age of any person legally admitted to and resident in Canada, who is in a position to receive and care for his dependents;
- (e) a United States citizen entering Canada from the United States who shall satisfy the immigration officer at the port of entry that he has sufficient means to maintain himself until employment is secured;

- (f) a British subject, by birth or naturalization in Great Britain or Ireland, Newfoundland, New Zealand, Australia, or the Union of South Africa, entering Canada directly or indirectly from those countries.

(NOTE.—These provisions do not apply to immigrants of any Asiatic race.)

Passport regulations of January 31, 1923 require that every immigrant shall be in possession of a valid passport issued in and by the government of the country of which such person is a subject or citizen, such passport to be presented within one year of the date of its issue: provided

- (1) that this regulation shall not apply to British subjects landing in Canada directly or indirectly from Great Britain or Ireland, Newfoundland, New Zealand, Australia, Union of South Africa, or the United States of America, nor shall it apply to United States citizens or to farmers, farm labourers or female domestics landing in Canada from the United States. The term "British subject" within the meaning of this clause includes only persons born or naturalized in Great Britain or Ireland, Newfoundland, New Zealand, Australia or the Union of South Africa.
- (2) that the passport of any alien immigrant sailing directly or indirectly from the continent of Europe shall carry the visé of a Canadian immigration officer stationed on the continent of Europe.
- (3) that the passport of any alien immigrant not included in No. 2 of this regulation shall carry the visé of a British diplomatic or consular officer.

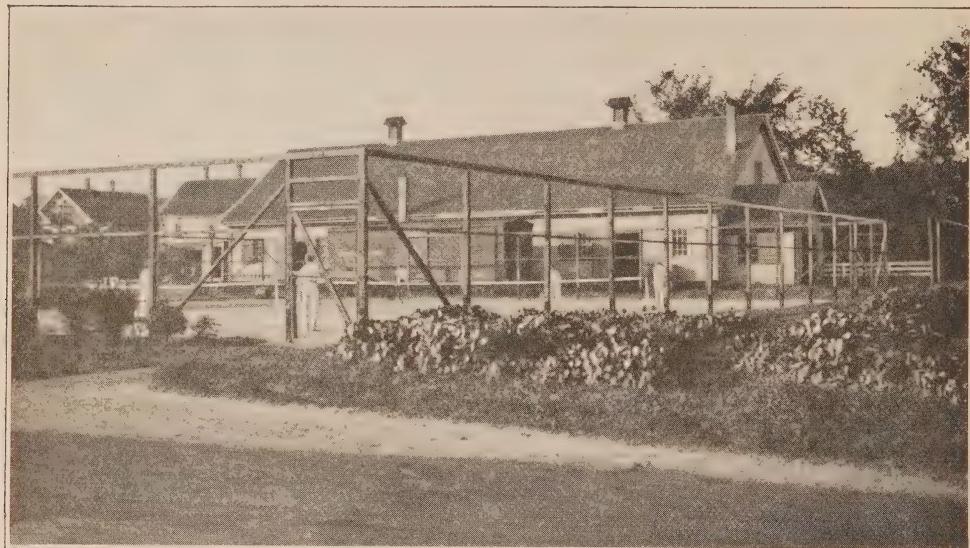
Nova Scotia is the nearest part of the Empire in constant and direct communication with the British Isles. The distance to Liverpool or Glasgow is 2,400 miles, or less than half of that from Plymouth to Cape Town, South Africa (5,295), and about one-fifth of the voyage to Australia or New Zealand whether by the Panama or Suez canal. Fares are proportionately less, ranging now from \$75 or £16 (third class) to \$140 and more (first class). Settlers' effects are admitted free of duty.

Few of the foreign immigrants go on the land, but are attracted rather by the high cash wages of mining and other industries. The class of immigrant most sought after is the farmer with some capital or the farm labourer who will in time become a full-fledged settler. Settlers, after passing through the hands of the Dominion Immigration officer on arrival are met by a representative of the Nova Scotia Department of Industries and Immigration, who directs to destination and gives information where to obtain employment. List of farmers needing help are available and also a list of farms for sale. The services of an expert valuer are offered free of charge to prospective settlers.

The Canadian Women's Hostel at Young avenue, Halifax, established by the Canadian Council for the Immigration of Women, attends to the reception of women seeking housework. They are met by the secretary and receive free lodging at the Hostel for twenty-four hours. Positions in families are readily found, and for new arrivals, at least during the first few months, the Hostel serves the purpose of a Women's Social Club.

Catholic girls are taken care of by the Sisters in charge of the St. Teresa Home. Much friendly work for the stranger is also done by the Salvation Army Immigration Department.

The Y.M.C.A. Hostel is in Barrington street, Halifax. A training farm for boys is maintained at Falmouth, in Hants county, for boys sent out from Nottingham, England. Children are the special care of the Middlemore Home at Fairview, Halifax, which in the last 50 years has received nearly 5,000.



At Kentville. Apple-packing plant with tennis court adjoining

By a co-operative arrangement effected in 1924 between the Dominion Government and the transportation companies, every third class passenger from the British Isles landing in Canada was to receive in cash twenty per cent of the Atlantic fare of \$75 with a proportional rate of payment for juveniles travelling at half-fare.

LAND SETTLEMENT

In August 1923 an Order in Council was passed transferring The Soldier Settlement Board from the Minister of the Interior to the Minister of Immigration and Colonization, the organization becoming the Land Settlement Branch of that department. By this the department is able to offer a land settlement service to newcomers, and give to the inexperienced migrant disinterested advice on farming districts and land values which will afford him a means of protection against exploitation and his own ignorance of local conditions.

Early in 1924 regulations were put into effect limiting the granting of new loans under the Soldier Settlement Act to the following classes:—

1. Soldier settlers who apply to purchase farms already owned by the Board.

2. Those who are owners of land upon which they could have applied for a loan but had not done so, loans in such cases to be limited under Clause 25 of the Soldier Settlement Act to 50 per cent of the value of the land for removal of encumbrances and a total of \$5,000 for all purposes.

3. Those to whom the Board was committed by reason of the fact that they had been recommended for training, or otherwise had an equitable claim to be dealt with, but no further new applicants to be accepted for training or qualification.

For purposes of administration the three Maritime Provinces are combined, with the district superintendent located at St. John, N.B., and supervising offices at convenient points in the three provinces. The number settled in the district on December 1, 1924, was 1,565, of whom 490 were placed on farms in Nova Scotia.

Provincial Government Aid to Settlers.—Under the Act of 1912 the Nova Scotia government may buy land, subdivide it, erect buildings on it, fence and prepare it, and sell to farmers in parcels.

By an arrangement with loan companies, money is advanced to the settler under a government guarantee. Where the loan company will agree to advance 40 per cent of the appraised value of the property, to an applicant wishing to buy or improve it the government will, in approved cases, advance a further 40 per cent. The applicant must possess cash to the value of 20 per cent of the appraised value of the farm in addition to what he would require for house-furnishing, stock, implements and family maintenance. Repayment is made by instalments on capital besides the interest, but these instalments may in certain cases be postponed for the first five years.

The 900,000 acres of Crown Lands still ungranted have by an Act of 1922 been withdrawn from sale or lease.

Both the Dominion and Provincial Governments do much to aid the settler in Nova Scotia by the agricultural experiment stations at Nappan and Kentville, by the entomological laboratory at Bridgetown, by model orchards and illustration stations, by co-operation in the purchase of stock, seed, fertilizers and tractors, by reliable publications and free advice.

There are now in Great Britain and other parts of the Imperial Commonwealth many with independent means of from \$2,500 to \$5,000 a year, whose income has been greatly curtailed by very heavy taxation and by a serious rise in the cost of living. Large numbers of officers, military, naval and civilian, have also been taken off the active list or retired on a pension. For them it must be harder than ever to bring up a family. Even though a good education at moderate cost in the British Isles may be easier to obtain than it has been, the competition for openings in a crowded community becomes more severe. Those parts of the Empire that can offer a lower cost of living, good education and a wide field of professional and other employments, appeal to the above-named class of settlers, especially if we add the lure of ample sport for rod and gun, and congenial social surroundings. Nova Scotia satisfies these conditions.

MAXWELLTON DEVELOPMENT SCHEME, DIGBY COUNTY, NOVA SCOTIA

In the summer of 1922, at the request of the Nova Scotia Government, an engineer from the Natural Resources Intelligence Service at Ottawa was instructed to make an examination of a tract of land at Maxwellton, Clare township, with a view to its development and settlement. The following is an extract from this officer's report. The nature of the country can be seen from illustrations in the text.

"The area involved in the Maxwellton development scheme comprises a tract of unsettled or sparsely settled land about 54 square miles in extent adjacent to the Dominion Atlantic railway in Clare township, Digby county, Nova Scotia. It centres about the flag station of Maxwellton which is 20 miles by railway south of Weymouth and 25 miles north of Yarmouth and about 5 miles in a direct line from the shore at St. Mary's bay.

"The surface of this land is somewhat rolling and irregular, being broken by numerous low ridges intercepted by valleys containing networks of small lakes and streams. Though little rock in place is exposed the occurrence of surface stones is fairly general, especially in the valleys. The removal of these once for all for use as stone walls on the farm would present little difficulty.

"The district was primarily heavily wooded, the principal varieties of trees being hardwoods consisting of maple, birch, beech, and ash. Among the softwoods were spruce and pine. Much of the area has been logged over, leaving partially cleared lands that are utilized by the few settlers as pasture. A fair amount of good hardwood still remains but most of the softwoods, especially the pine, have been cut. The soil compares favourably with Nova Scotia soils in general and responds readily to cultivation and treatment.

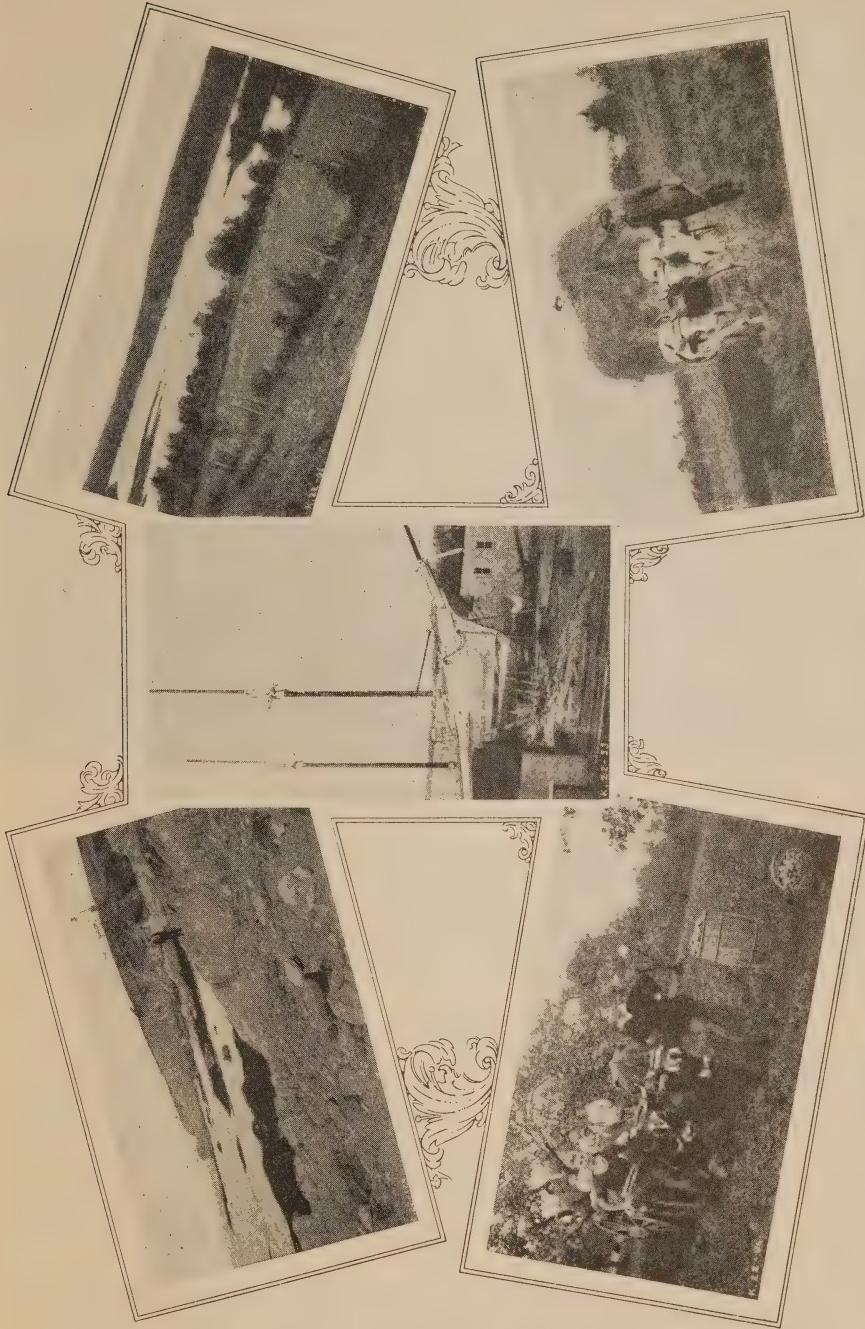
"The climate of this district is the mildest found in Nova Scotia. Precipitation is ample but not excessive. The growing season is long and the winters are short. An ample supply of pure water for domestic and farm purposes is everywhere available and even small water-powers have been developed here and there in connection with lumbering operations. Good well water is obtained at small depth everywhere.

"The Dominion Atlantic railway traverses the district from north to south with fully equipped stations at Meteghan and Hectanooga, a flag station at Maxwellton and a siding three miles south. Excellent shipping facilities are available at Yarmouth, Weymouth and Digby, all within a short haul by rail, so that major transportation services already exist. Good county roads surround the district but in order to open it up some 10 or 15 miles of new roads will be required internally in addition to improvements on a few miles of pioneer roads. Generally speaking, however, the public utilities necessary for the successful development of this district are already provided together with many amenities of civilization which are seldom found in new settlements.

"Of the 54 square miles investigated from reconnaissance surveys it was found that approximately one-third was covered by water. Of the land area about one-third is suitable for immediate cultivation, one-third for pasture and one-third might profitably be left as wood lots. This gives roughly 8,000 acres of land that could be immediately cleared and

SCENES IN MAXWELLTON DISTRICT, DIGBY COUNTY, NOVA SCOTIA

1. Cape St. Mary. 2. Hunter Lake. 3. Repairing Schooner at Meteghan. 4. Apples for cider mill. 5. Having



put to crop, with an equal amount of ready pasture that could be improved by seeding down, and a similar area of good wood lots. Allowing 150 acres as an average farm this district could be divided into 160 homesteads, providing for 160 families on the land and probably another 40 in various callings allied with such industry. With an average of 5 to a family these 200 families would add a population of 1,000 to Clare township, all of which could no doubt secure a competent living from the Maxwellton district."

Since the publication of the above report the Canadian Pacific Railway Company has secured a block of land near Hectanooga Station, partly included in and partly adjoining the Maxwellton district. This block is being intelligently subdivided into farms of about 100 acres, no farm being more than $1\frac{1}{2}$ miles from a railway station by a good road, and each farm being provided with or having access to a woodlot. A considerable number of families are likely to be settled in this community in the spring of 1925.

RAILWAYS

No spot in Nova Scotia being more than thirty miles from one of a hundred arms of the sea, railroad construction, towards which the Provincial Government offers a subsidy, is not pressing. The present mileage is 1,434.

The trunk line is the Canadian National Railway, owned and operated by the Dominion, with about 600 miles in the province. Halifax, the terminus, is 836 miles from Montreal. The eastward branch from Truro serves the mining and industrial regions of New Glasgow and Sydney, the trains being ferried across the strait of Canso at Mulgrave, where much of the fish is shipped in refrigerator cars for the western market.

Subsidiary to this division are various coal lines. The British Empire Steel Corporation ships in winter to the open harbour of Louisburg by its own line from Sydney. The Inverness Railroad and Coal Company line starting from Inverness, on the gulf of St. Lawrence, follows the coast line past Port Hood and connects with the main line at Hawkesbury.

The southern entrance of the Bras d'Or lakes at St. Peter connects with the Canso ferry by the Cape Breton railroad. From Halifax an eastward extension of the Canadian National Railway system opens up the Musquodoboit valley.

The western part of the peninsula is served by the Halifax and Southwestern branch of the Canadian National Railways (389 miles) and by the Dominion Atlantic (300 miles). The latter is controlled by the Canadian Pacific, which thus has an independent line from Truro through Windsor, to a point, Windsor Junction, 21 miles from Halifax. The Dominion Atlantic also extends from Windsor through the Annapolis Valley and Digby to Yarmouth. Short lines subsidiary to the Canadian National Railway trunk line runs from Maccan to Joggins and from Springhill Junction to Parrsboro.

From Yarmouth, the point of arrival of fast steamers from Boston (235 miles), the Halifax and Southwestern (C.N.R.) runs to Halifax. From Bridgewater in Lunenburg county a branch strikes across to Middleton in the Annapolis valley. Here it crosses the Dominion Atlantic and runs parallel with it to Victoria Beach on Digby Gut.

It is to be noticed that while there are three great lines connecting Middle and Western Canada with Moncton and St. John, from Moncton to Halifax there is only one line for the 186 miles, of which only 14 miles is double-track. This bottle-neck condition is being improved by additional double-tracking to meet the leaping and bounding needs of the ocean terminals and the long "Atlantic wharf," as Nova Scotia is called. Nova Scotia has the natural and, in winter, the necessary ports to serve it. Eastern Nova Scotia, again, having the only coal-field east of the prairies, must become a Canadian Newcastle or Pittsburg.



Preparing material for the Good Roads Movement in Nova Scotia

The Cobéquid mountains are almost as large a factor in the isolation of Nova Scotia as is the sea. The railroad climbs the valley of Folly river for nine miles at a grade of nearly 50 feet to the mile, passes over the range at over 600 feet and descends by another steep grade to the lowland of Cumberland county.

ROADS

A map showing the principal motor roads and the points from which hunting and fishing resorts are reached, and also the chief natural resources of the province is published by the Natural Resources Intelligence Service, Ottawa, and can be had on application.

The "Official Road Map" of the Nova Scotia Motor League is also a good guide to the highways that encircle and traverse the whole province. The fee for membership in the N.S.M.L. is \$5.

The Canadian Highways Act allows the Dominion in co-operation with the provinces to contribute 40 per cent of the cost of highway projects. The total appropriation of \$20,000,000 was made available in the five years ending March 31, 1924. The amount under the Act to which Nova Scotia was entitled was \$1,468,720. In Nova Scotia 383.7 miles of highway were thus built or rebuilt to the end of 1922 and agreements were effected

for the completion of a further 89.82 miles. Under the Motor Carrier Act of 1923 a tax was fixed for motor carriers of $\frac{1}{4}$ cent per ton mile of travel over public highways.



With her abundance of Road Metal, Nova Scotia is building New Highways

LOCAL STEAMSHIP SERVICES

The Nova Scotia coast, the Bras d'Or lakes, and the arms of the sea are served by about twenty-five subsidized steamship companies, every place of any size on the shore being thus brought in communication with such distributing centres as Halifax and Sydney. There are six local services from Halifax east and west; the French Mail steamer runs fortnightly between Halifax and the St. Pierre and Miquelon islands, calling at North Sydney.

The Annapolis and Minas basins and Yarmouth have steamship connections with St. John, N.B.; the Canadian Pacific Railway runs a week day boat between Digby and St. John. Newfoundland is linked with Halifax by the Farquhar steamers, which, calling at many points, make an outward trip of 596 miles as long as navigation is open. A week day steamship service is also operated by the Reid-Newfoundland Company between Port au-Basque, Newfoundland, and the Canadian National Railways terminus at North Sydney (101 miles). From Pictou a steamer crosses fortnightly to the Magdalen Islands, calling at Souris, P.E.I., and there are also semi-weekly services to Prince Edward Island.

SHIPBUILDING

Canadian shipbuilding dates from 1605 with the small vessels built at Port Royal (Annapolis) by François Gravé, Sieur de Pont, sailor from St. Malo. Seventy years later Intendant Talon's trading vessels are

voyaging from Quebec to the West Indies and France—forerunners of those of the later triangular course—Canada to South America, Marseilles and return.

Shipbuilding after the fall of Louisburg dates from the launching of the "Pompey," 25 tons, at Yarmouth, N.S., in 1761.

The year 1833 is the famous seamark when the *Royal William*, capacity 363 tons, left Pictou on August 29th, and reached London in twenty-five days—the first ship to cross the ocean under no power but steam. Though this ship was built in Quebec, it was to Nova Scotia, in the persons of the three Cunard brothers, that the vision came. Steam power, however, was as yet a baby. In 1850 Mackenzie, of Pictou, astonished Glasgow with the *Hamilton Campbell Kidston*, the biggest sailing ship the Clyde had ever seen. About 1864 Nova Scotia was launching 300 vessels, and by 1880 Eastern Canada, building, sailing, owning and selling, had become one of the four most live shipping districts of the world. For a period between these dates Canada headed the lists of tonnage in proportion to population.

It was not so much the use of steam that caused the decline as the change from wood to metal. Had Nova Scotia developed her metal industries a generation sooner, the 500 Canadian vessels built in 1875 would surely not have dwindled to 29 in 1900.

But the general substitution of steel for wood and big tonnage for small, the severe protective policy of the United States, and the free trade of Britain enabled the inherited experience of the Clyde and elsewhere to capture the market. Though there was a gradual recovery after 1902, it was not till the traffic and transport issues became acute in 1916 that production was speeded up.

In 1916 sixty wooden vessels, representing 12,000 tons, had been completed and the war had stimulated the yards to such full and effective work that in 1917 20,000 tons were completed without any Government aid to the builders.

The report of the Nova Scotia Shipbuilding Commission in February, 1918, shows that at that time 27,500 tons of wooden ships were on the stocks, exclusive of fishing schooners and one munition steamer. This fleet consisted of sixty-six schooners, ten of which were four-masters, and they were being built at no less than forty small yards nearly all round the coast. It was clear that wooden-ship building could be safely left to Nova Scotian enterprise unaided.

The case of steel ships was different. Here large plants and capital were needed. Though for many years plates of fair size had been rolled at New Glasgow, the difficulty lay in securing the heavier plates, which were now scarce because of the Old Country demand and the vast shipbuilding programme launched in the States. The Admiralty Controller advised that "it would be of great service if arrangements could be made whereby ships' plates could be rolled in Canada," but without Government aid and the assurance of a continued demand the diversion from established products and the building of a heavy plant was beyond the power of existing companies. Arrangements were ultimately made with the Dominion Iron and Steel Company for production of heavy plates.

Meanwhile the Imperial Munition Board issued contracts for steel and wooden ships to cost \$64,500,000, of which the Nova Scotia Steel & Coal Company at New Glasgow and the Halifax Shipyards Limited took \$1,340,000. The latter company has a dry dock at Halifax 560 feet long. The three above-named companies have since been merged in the British Empire Steel Corporation, Limited.

Shipbuilding is more important in peace than in war; indeed, it is only by activity in times of peace that ships and especially crews can be ready to hand in the day of stress. Had it not been for the mercantile marine and a myriad of trawlers and seamen, the allied armies could not have been massed nor the allied nations fed. An American Ambassador in Great Britain has said: "There is no more glorious page in the history of the war than that contributed by their bravery and self-sacrifice in the face of known and constant danger, all the more terrible because it could not be foreseen. They made it possible to transport the armies of Britain and the United States to France and to provision them when there. They kept the commerce of the allied world alive and brought, not alone munitions to the troops, but food and fuel to the people of the allied countries. They are the men who defied and defeated the base iniquity of the German submarine campaign, and it is not too much to say that without their brave devotion the war would not have been won:" and the Admiral in command of the United States fleet, publicly declared that "without the British merchant seamen our army and navy would have been helpless." The share of the Maritime Provinces in this noble service is fresh in memory.

Nova Scotia, lying in the most favoured spot of the largest of the great fishing areas of the world, has from the first had boats and crews. Her fleet of fishing schooners is still growing; Lunenburg alone has 125; but to meet French enterprise on the Banks still more steam trawlers and fast fish-carriers from outside waters will be needed. The fishing fleet is the proper school for young seamen.

With cradles full of sailors, and craftsmen in every inlet, with the land on the edge of the sea packed with coal, and with iron nearby, Nova Scotia could herself in time of need both build and man a mercantile marine and save the Dominion a yearly normal freight bill of fifty million dollars.

(Note.—All ships of iron and steel building in the province and all machinery used in building the same are exempt from provincial taxation.)

CABLE AND WIRELESS STATIONS

"Our new Arachne, with steel web unfurled,
You catch the wandering whispers of the world."

The first transatlantic Marconigram was sent from the Table Head Station near Glace Bay in 1902.

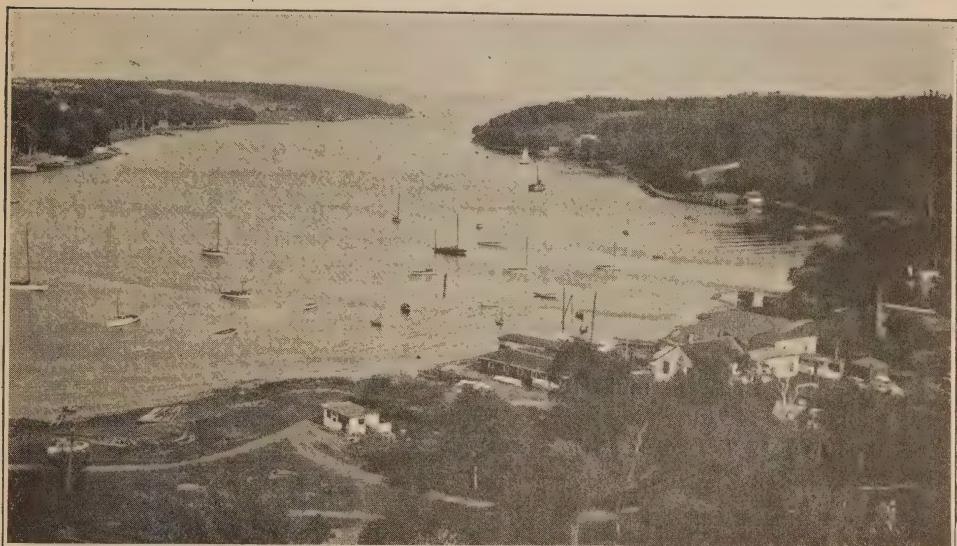
The Atlantic Cable Stations are at Halifax, Canso and Sydney.

The Radio-Telegraph Stations are these:—

Glace Bay and Louisburg, owned and operated by the Marconi Wireless Telegraph Company of Canada; North Sydney, Camperdown (Halifax), Cape Sable, Sable Island, owned by the Federal Department of Marine and Fisheries and operated by the Marconi Company.

Direction finding stations at Chebucto Head, Canso, St. Paul Island, and Yarmouth, owned and operated by the Department of Marine and Fisheries.

Radio Beacons are at Sambro Outer Bank Lightship, Seal Island, and Lurcher Shoal Lightship, owned and operated by the Department of Marine and Fisheries.



The Northwest Arm, the Inner Harbour of Halifax, from Halifax Tower

BAY OF FUNDY TIDES

The highest tide in the Bay of Fundy is at Noel river, in Cobequid bay, where there is a rise above low-water mark of 31 feet at "neap" and 53 at "spring" tides. In the Maccan river, which flows into Cumberland basin, there is a tidal "bore," though not so high as that of the Petitecodiac river in New Brunswick.

The tides of the bay are of the "stationary," as opposed to the ordinary "progressive," type. Though the latter variety is not wholly absent, the great variation between high and low tide is due mainly to the oscillation of the body of water in the box-shaped bay. This oscillation approximates in periodic movement to that of the ocean tides and is due to the motion set up by them.

(See "Tides in the Bay of Fundy" in Geog. Review, April 1922, by H. A. Marmer, U.S. Coast and Geodetic Survey, and Geol. Survey Vol. VII, 1894, M. 10-21; and Vol. IV, 1888-9 N. 17.)

A wave-counter or undagraph is maintained at Chebucto Head.

NOVA SCOTIA AND AERONAUTICS

In the spring of 1918 two aviation stations were established in Nova Scotia to increase the efficiency of the anti-submarine patrols on the Atlantic coast. With the assistance of the Imperial Government and

the United States Naval authorities stations were opened at Halifax and North Sydney and continuous patrols were operated until the Armistice.

With the advent of peace the forces engaged in this work were disbanded and the stations placed in charge of care and maintenance parties.

In 1919, the Halifax Station was transferred to the Air Board and the North Sydney Station was abandoned.

Dartmouth Air Station, situated on the eastern side of Halifax Harbour, near its entrance, is maintained as one of the bases of the Royal Canadian Air Force. During the past two years there has been an increase in the demand for flying for civil purposes, and in 1924 operations calling for over 100 hours' flying were carried out for various branches of the public service. The most important of these is in connection with the aerial survey work of the Topographical Survey of Canada. Oblique photographs of the counties of Digby, Yarmouth and Shelburne were taken from the air, from which will be developed new maps of these counties.

In addition to this, vertical photography was carried out over a district of 60 square miles in the Pictou and New Glasgow area for the revision of the maps of that part of the country. Another large section of the Province will be photographed in the same way during 1925. Photographic work has also been carried out during the past three years for the Waterpowers and Reclamation Service, in connection with the investigation of the water power possibilities of the province.

(Contributed by the Secretary of the Canadian Air Force, Department of National Defence.)

Nova Scotia has a wonderful future for aerial operations. The east of Cape Breton island is a natural jumping-off place for transatlantic routes, being, if we except Newfoundland, nearer to Europe than any other point in North America. Sydney is the apex of a triangle whose sides extend in an air line 644 miles to Montreal, 956 to Toronto, 602 to Boston, 784 to New York. Delivery of mails to or from ocean liners by means of airplanes at some point off the coast of Nova Scotia is easy to picture and would save many hours in postal transit. Halifax should be a terminus for aerial traffic with the West Indies to the benefit of their closer association with the Dominion.

Nova Scotia is particularly adapted to the use of hydroplanes owing to its well protected harbours and its network of inland lakes. The Bras d'Or lakes are memorable as the nest where the hydroplane was hatched. These are the surfaces on which Graham Bell and Baldwin made their first experiments and it was at Baddeck on February 23, 1909, that J. D. McCurdy, a Cape Breton man, made the first flight in the British Empire in a machine heavier than air.

Anglo-Celtic contributions to civilization and vitality are "bounded on the east by Magna Charta and on the west by the week-end," and if a Rocky Mountain Aviation Company could lease a seaplane harbour near Banff and allow flying visitors to view the Rockies, why should not a like enterprise, with a base on Bras d'Or, reveal from the sky the charms of the sea-girt Acadia and L'Ile Royale?

Telephones.—In 1923 the ratio of telephones to population was 1:143. The cost of equipment was about \$278,000, of which the provincial government paid \$52,715 in subsidies.

INDUSTRIES IN WORKING

The physical position of Nova Scotia, generally, offers great inducements to the industrial investor; it has a good share of water-power, and abundance of coal, plenty of raw material and many fine harbours where supplies from foreign countries, such as sugar-cane, cacao, tobacco, cotton, rubber and oil, can be laid down cheaply, and from which fleets of ships built in the province can sail abroad.

In 1922 the industrial establishments, the capital invested, the number of employees, and the net value of production left in producers' hands after elimination of the value of the materials consumed in the production process, were as follows:—

Grouped industries	Establishments	Capital invested	Employees	Net value of products
Vegetable.....	106	\$10,083,542	3,897	\$ 4,773,301
Animal.....	312	6,086,636	2,116	3,048,734
Textile.....	39	7,729,907	1,718	2,394,585
Wood and paper.....	535	15,278,262	3,399	5,293,389
Iron and steel.....	35	20,125,568	2,415	4,890,112
Non-ferrous metals.....	2	87,303	26	30,494
Non-metallic mineral.....	35	26,494,407	1,158	4,840,850
Chemical and allied.....	10	3,128,224	306	1,128,828
Miscellaneous.....	66	8,785,424	546	2,313,161
Totals.....	1,140	\$97,799,273	15,581	\$28,713,454*

(*Less wages and salaries \$11,569,823)

Apart from the manufacturing dependent on the four big industries, fishing, mining, forestry and agriculture, there are other important industries established, mainly in Halifax, Dartmouth, Truro, Amherst, Windsor and Yarmouth, namely:—

- | | |
|---|----|
| (1) Chocolate, confectionery and biscuits..... | 7 |
| (2) Condensed milk..... | 1 |
| (3) Oiled clothing..... | 4 |
| (4) Oil and sugar refining..... | 2 |
| (5) Paint..... | 3 |
| (6) Railway cars..... | 2 |
| (7) Textiles, hosiery, hats and caps, boots and shoes, creosoting plant | 11 |

An analysis of the *Trade Index of Canada* for 1923-24 does not reveal any development of the following manufactures, all of which would seem natural to the resources of the province and to which it is desirable to invite attention:—

Abrasives, cod liver oil (refined), fishing nets (the fishing nets used in Nova Scotia are purchased in Boston, U.S.A.), jams, jellies and marmalade, maple syrup, fur garments, leather gloves and mitts, slate roofing, soap, (washing and toilet).

Smaller Industries.—There are several small industries suited to the province which might be judiciously revived, perpetuated or newly developed. Such are the home spinning and weaving of flax and wool, and the making of pottery and hardwood articles for domestic use. There are still many people who prefer what bears a stamp of individuality to machine-made woollen linen textiles or to clay ware and furniture turned out by the million yards and the thousand pieces.

As shown elsewhere, though the flax industry has nearly, if not quite, died out, the climate and soil can grow a flax equal to any. All that is required to revive the industry is a renewed inclination of home-dwellers to what a great writer calls "the art of queens."

The spinning and weaving of wool is in somewhat better plight. Wool of a fine grade is still produced and will be still finer as the breed of sheep is improved. It is only a few years since pieces of Nova Scotian homespun which "never wore out" were snapped up by the smart Westend London tailors, and they would be equally sought for now were they to



The Fairy Valley of the Gaspereau, near Wolfville

be had; now, however, the man who knows where to pick up even 8 yards of 27-inch cloth, grown, spun and woven on some Cape Breton farm, is likely to keep the secret to himself.

The hand-made pottery craft is one that must be newly developed. Suitable clays are on the spot, and even if Nova Scotians had a bias for what is often carried as ballast on ships from Britain or is machine-made in Ontario, how many of the 60,000 tourists would not gladly take home some simple well-designed jug or bowl wrought on a Nova Scotian potter's wheel?

The working up of the Nova Scotian hardwood into specialties is on a somewhat different plane, though here too a well-joined arm chair, or a neat book-shelf, would be a happy memento to the visitor of some past summer trip; and, when so many farms have a hardwood lot and a nearby old mill-site for power, machine-made articles should bring in a good return. Let the young folks take advantage of the manual training and art-schools now generally available, and the skill they gain for handicraft will not be thrown away when they are at home.

The essential, however, for the success of any or all of the above crafts is co-operation under the guidance of a central office directed by

a manager of business ability and enthusiasm. Let it be once known that there is some branch of the Department of Industries or some Handicraft Society of Nova Scotia having a display-room for samples of hand-made linen, table covers, portières, rugs, coverlets, homespun cloth, jars, jugs, bowls, furniture, or even glassware from our white silica sands, the visitor and native son alike will see that Nova Scotia can turn the smallest of her resources into things of beauty and profit.

INCORPORATION OF JOINT STOCK COMPANIES

Any three or more persons, by subscribing their names to a memorandum of association, may form an incorporated company with limited or unlimited liability for any lawful purpose (except to form a banking, loan, insurance or trust company). The fees for incorporation are:—

(a) Where the capital stock is divided into shares:—

For \$5,000 or less	\$40
For \$5,000 to \$10,000	\$50
For \$10,000 and upward	\$50
Plus \$1 for every additional 1,000 up to	\$50,000
Plus 50c. " " "	\$200,000
Plus 25c. " " "	\$1,000,000
Plus 15c. " " "	upward.

(b) When the capital stock is not divided into shares:—

For 20 members or less	\$ 50
For 20-100 members	\$100
For 100 or more \$100 plus \$1 for every additional 50 members.	
Fee for an unlimited number of members, \$250.	

Annual Registration Fees.—Every company must be registered under the Domestic, Dominion and Foreign Corporations Act, and must file a statement annually.

Fees.—From \$5 for a capital of \$5,000 to \$100 for \$1,000,000 plus 10 cents for every additional \$1,000.

Minimum fee for a foreign corporation, \$200.

Minimum fee for a Dominion corporation, \$150.

The Governor in Council may reduce the fee payable by a foreign or Dominion corporation according to the nature of the business and the amount of capital used therein.

TAXATION

The per capita taxation of Nova Scotia for 1922 is estimated at \$47.75, viz., \$35.54 for Dominion purposes and \$12.21 for local.

Dominion taxes include personal income tax, war taxes, customs duties and excise. Local taxes include both municipal and provincial taxes.

According to this statement of the "Citizens' Research Institute," the total taxation of the province of Nova Scotia is \$7.34 per capita higher than where lowest (P.E.I.), and \$32.83 lower than where highest.

Banks pay \$250 to \$1,000 plus \$50 to \$100 on each branch.

Loan and trust companies, telegraph, telephone, gas, electric and express, \$250-\$350.

Insurance companies, one per cent of their gross premiums.

In cities and towns a highway tax of one-tenth of one per cent.

In municipalities on land a personal tax of 60 cents on every \$100 assessed. Persons holding more than 500 acres pay one per cent.

Nova Scotia is divided into local units of cities, towns, and municipalities.

There are two cities (Halifax and Sydney), 41 towns, and 24 municipalities, corresponding in name to the county divisions, with the addition of Argyle (in Yarmouth and Clare), Barrington (in Shelburne), Chester (in Lunenburg), and St. Mary's (in Guysboro).

Of the cities and towns 12 have an assessment ranging from \$55,000,000 (Halifax) to \$2,220,000 (Stellarton), the 31 others being all assessed at under two million. The urban rates, including school tax, varied from \$2.50 to \$6 per \$100 assessment in 1923. The county rate ranged from \$1.25 (Annapolis county) to \$5.42 (Inverness).

The municipal taxation on industrial plants varies locally, some towns offering a bonus as an inducement to establishment.

There is no provincial tax on industrial plants other than the fees imposed for registration of joint stock companies.

The Public Utilities Branch of the Nova Scotia government, which covers a large field of activities, dealt with 350 various utilities in 1923.

Dominion Income Tax.—The *normal tax* is 4 per cent on incomes up to \$6,000 and 8 per cent on the excess over \$6,000. On incomes above \$5,000 there is a *surtax* of 1 per cent up to \$6,000, 2 per cent on \$6,000 up to \$8,000 and so on up to a limit of 65 per cent. There is also a *super-tax* of 5 per cent on the combined amount of normal tax and surtax on incomes exceeding \$5,000 a year.

Note.—(a) A married man with two children under 18 having an income of \$3,000 (£600) pays no Dominion income tax in Canada.

In England he would pay \$424.50 (£84 18s. 0d.) in 1925-6.

(b) A man with an income of \$8,000 derived wholly from English dividends could reinvest his money in stocks of equal grade in Canada and thereby save \$872 (£174 8s. 0d.) in 1925-6.

COST OF LIVING IN NOVA SCOTIA

The average weekly cost in 60 cities of Canada of twenty-nine staple foods, fuel and rent, for a family of five in Oct., 1913, 1920, 1924, was:

1913.		\$14 02
1920.		26 46
1924.		20 67

Average retail prices in Nova Scotia of staple foods in October, 1924:—

Sirloin steak.	29.0c. per lb.
Mutton (leg).	23.0 " "
Pork (fresh leg).	24.7 " "
Bacon (breakfast).	32.9 " "
Cod (fresh).	12.0 " "
Lard (best).	24.1 " "
Eggs (fresh).	47.9 per doz.
Milk.	12.1 per qt.
Butter (creamery).	45.8 per lb.
Cheese.	29.1 " "
Flour.	5.3 " "
Rolled oats.	6.2 " "
Rice.	10.3 " "

Potatoes	28.9	per (15-lb. peck)
Strawberry and raspberry jam	98c.	4-lb. tin
Sugar (granulated)	10.4	per lb.
Tea (black in bulk)	67.5	"
Coffee (ground)	61.3	"
Raisins (seeded)	18.4	per (15-oz. pkt.)
Currants	21.1	per lb.

Wood (stove in lengths per cord) \$9.75 hard, \$7.66 soft.

Coal (soft) per ton, \$8.69.

Rent of 6-room house with modern conveniences, \$22.6 per month.

(*Labour Gazette*, Oct., 1924)

FARM WAGES IN NOVA SCOTIA, 1918 AND 1923

Summer months—

		Wages	Board	
Men	1918	\$41	\$19	= \$60
Men	1923	36	20	= 56
Women	1918	16	14	= 30
Women	1923	18	14	= 32
By the year—				
Men	1922	with	..	= 55
Women	1922	with	..	= 340

(Sup. to *Labour Gazette*, January, 1925.)

As a rule farmers do not keep help by the year excepting on the larger farms where there are tenant houses. Married men are given house rent free, also fuel (wood) and produce off farm, but they must supply their own house furnishings, also groceries and meat. Single men are provided with their board and lodging in addition to wages.

The wages and hours of labour of mechanics in Halifax, N.S. in September, 1924, were as follows:—

	Wages	Hours per week
Bricklayers per hour	\$.90	44
Carpenters per hour . . . . .	.57	44 to 54
Electrical workers per hour . . . . .	.60	44
Painters per hour . . . . .	.57-66	48
Plumbers per hour . . . . .	.60	44
Stonecutters per hour . . . . .	.64-75	44
Labourers per hour . . . . .	.30-35	44 to 60

Mining Wages—

Miners (contract) per day	7.25	8 hrs. per day
Miners (hand) per day	4.60	8 hrs. per day
Labourers (underground) per day	3.65	8 hrs. per day
Labourers (surface) per day	3.50	8½ hrs. per day

LABOUR ORGANIZATION

There were no organized trade unions in Nova Scotia prior to 1879. In 1923 there were 134 branches, 93 reporting a membership of 12,954. Of these branches 123 are international organizations and eleven "non-international." There is also one with British affiliation.

Members of trades union in Nova Scotia number between 4 and 5 per cent of the present total for Canada, which, in 1923, was 278,092 distributed in 2,487 branches, compared with the record year, 1919, of 378,047 in 2,847 branches.

The Provincial Miners' Union, organized in 1879, which in 1882 changed its name to the Provincial Workmen's Association, was probably

the first trades union in Canada granting charters. In time the organization of the United Mine Workers of America entered Nova Scotia and formed local unions in the mining districts. In 1917 the two rival unions combined to form the Amalgamated Mine Workers of Nova Scotia, which later became affiliated with the United Mine Workers of America, and formed District 26 of that organization. In 1923, there were 38 local unions of the United Mine Workers of America in District 26, which includes New Brunswick as well as Nova Scotia.

The Trades and Labour Congress of Canada, with which District 26 of the United Mine Workers of America is affiliated, is the largest central labour organization in Canada. Its activities are confined largely to promoting legislation in the interest of labour, and the unions affiliated with it are affiliated also with the American Federation of Labour and are the so-called "international unions." The Trades and Labour Congress is a member of the International Federation of Trade Unions whose headquarters are at Amsterdam, and by an exchange of delegates annually with the British Trade Union Congress, it keeps in touch with that organization. Since the establishment of the International Labour Conference as a part of the machinery of the League of Nations, the Trades and Labour Congress has sent a delegate each year to the annual sessions of that body, and in 1922 the President of the Trades and Labour Congress was elected as one of the workers' representatives on the Governing Body of the International Labour Office.

Workmen's Compensation.—An Act relating to workmen's compensation was passed by the Nova Scotia Legislature in 1915, with subsequent amendments, under which a provincial board administers an accident fund made up exclusively of compulsory contributions from employers grouped in classes and assessed according to the hazard of the industry.

Employment Agencies.—By an Act of 1920, all private employment offices in Nova Scotia were abolished except those that may be exempted by an order in council. No person or firm may receive, directly or indirectly, any fee for giving information regarding employers seeking employees or vice versa under a penalty of \$10 to \$25. The Nova Scotia branches of the Employment Service of Canada are at Halifax, New Glasgow and Sydney.

Women and Children.—A Minimum Wage Act for Women employed in industrial occupations was passed by the Nova Scotia Legislature in 1920, but no action has yet been taken under this statute.

No boy or girl under 14 may be employed in a factory except during summer months in the gathering or preparation of fruits or vegetables for canning.

No boy or girl under 16 may be employed in a factory for more than 8 hours in any one day nor for more than four hours on a Saturday, and the same regulations apply in shops to boys under 14 and girls under 16.

No child under 16 may labour in any business whatever or street trade during school hours (9 a.m. to 3.30 p.m.) unless provided with a satisfactory school certificate.

Welfare Work.—As an example of the increased attention paid to the welfare of employees in recent years, reference may be made to the

Department of Industrial Relations, formed by the British Empire Steel Corporation in Cape Breton in 1920. The safety and first aid division reports all danger hazards, and organizes first aid classes. These are attended in winter by some 300 men, of whom 250 in 1921 earned the certificate of the St. John Ambulance Association. It has also established first aid rooms at the various collieries and machine shops, with the latest hospital appliances needed for emergencies. The employees' service division engages a special inspector, who attends to sanitary and cleaning up matters and to improvement of conditions in the collieries, boarding houses and homes. The employment division makes it no longer necessary for men to spend days in travelling among the score of mines looking for work, but provides central bureaux of information.

TOWN PLANNING

The laying out of Sydney by the Royal Engineers in 1784 was probably the first case of town planning by the British in Canada. The Town Planning Acts of the Nova Scotia Government (1915) make suitable provisions for all future urban and rural development in the province. Under these Acts every local authority shall create a local board, consisting of a mayor or warden, two other ex-officio members of the council, and not less than two ratepayers to be appointed by the local authority for a term of three years. The board must prepare a town planning scheme for lands within its area, or else a set of town planning by-laws.

The planning proposed is largely of undeveloped areas, and, so far as relating to areas already built upon, it seeks to regulate voluntary reconstruction by the owner rather than make reconstruction necessary at the public expense. The essential object of the Acts is that the area shall be planned in advance of construction so that any development may work out in harmony with a well thought out scheme. Under the Nova Scotia Housing Act, the sum of \$1,398,420 had been expended up to the end of 1923 by the ten local Commissions. The average loan on the 392 houses erected was \$3,584.

FOREIGN TRADE

Halifax Harbour.—There are on the map of the Western Hemisphere certain ports destined for world trade and growth by a combination of fine harbourage and geographical position. Among these are New York, New Orleans, Rio de Janeiro, San Francisco, Vancouver and Halifax.

Historically, Halifax has had her share of world history since Colonel Cornwallis on June 21, 1749, sailed into Chebucto Bay on the sloop *Sphinx* and penned the despatch: "Our officers agree that the harbour is the finest they have ever seen." Its part in the Seven Years' war, in the wars with Napoleon, and in the war of 1812 as the British naval base in the North Atlantic is perhaps better known to most than its yet unwritten history in the years of the great war. Here fleets were assembled for the transport of Canadian, Anzac and United States troops and Chinese coolies, and it was no uncommon sight to see twenty to thirty ships leaving in one convoy.

Commercially, however, Halifax had to be content with her position as a coaling base and port of call, or with a thriving but spasmodic West

Indian or Atlantic coast trade, or with that more regular local commerce on the St. Lawrence river and gulf, until transcontinental railroads linked her with the west.

But times have changed since the *Royal William*, in 1831, paddle-wheeled between Quebec and Halifax and since thirty-five days was good time to Liverpool. With the change to boats out of sight of land for four days only, and a dozen steamship lines freighting to all ports, Halifax began to take on the attributes of a modern port. In 1912 the Government planned the new ocean port for the Canadian National Railways' transcontinental lines.

Halifax harbour is a masterpiece of nature. An inland basin is connected by "The Narrows" with an outer bay.* This bay forms the outside harbour, a mile square and 70 feet deep, siltless, free from troublesome currents and protected by islands at the mouth.

On the west side of this body of water the Government has secured 85 acres with a reserve of 115 to be obtained by reclamation. Here within the pierhead line 62 acres will be taken up by shipping, with twenty-seven berths for ships up to a limit of 700 feet, but prepared to accommodate ships of any size up to 1,200 feet. There is a depth of 45 feet at the piers at low water.

The five landing quays, 1,250 feet by 360 feet, connect with a new union passenger station, and grain elevators and a conveyor system will meet all the needs of commerce. This great work, known as "The Halifax Ocean Terminals," is not yet completed up to ultimate plans, but the units erected are in use every day. The expenditure so far has been \$15,000,000.

Doubtless, also, Halifax will retain her claim to have the lowest port charges on the Atlantic coast.

COMPARATIVE TABLE OF DISTANCES FROM HALIFAX AND NEW YORK TO SIX TRADE CENTRES

To	Nautical miles from Halifax	Nautical miles from New York
Liverpool.....	2,485	3,036
Pernambuco.....	3,541	3,678
Rio de Janeiro.....	4,611	4,748
Montevideo.....	5,586	5,723
Buenos Aires.....	5,701	5,838
Cape Town.....	6,423	6,795

Sydney Harbours.—The Sydney harbours, being in the heart of the coal-fields, are destined in time to have a full share of Canadian trade. The drift-ice which blocks the entrance in certain winds is troublesome for two months only. The entrance from the ocean is three miles wide, its length of five miles narrowing to one-half mile between two protecting bars, where the mean depth is 39 feet (l.w.s.t.). North Sydney harbour

* NOTE.—"The idea that the ice sheet carved out the valleys which indent the southern coast is a mistaken one. These valleys are plainly the work of rain and rivers during the period preceding the ice age, drowned and subsequently altered, in detail only, by the activity of the ice sheet. They are not true glacial fiords like the famous fiords of Norway and Alaska."

lies one-half mile within this narrower entrance. The channel to North Sydney is 36 feet deep and more than a mile wide, and from North Sydney to Sydney 40 to 45 feet deep and three-quarters of a mile wide. At Sydney piers the present depth of 30 feet on a mud bottom could be easily dredged to 40 feet if needed.

Sydney harbour has an area of 15 square miles and a depth of full 40 feet; it has miles of good foreshore owing to the projection of the land, fog is almost unknown, and, being a natural harbour, there are at present no charges for maintenance. The pilotage charge for a 7,000-ton vessel is \$82.

In Nova Scotia there are no less than 99 harbours officially recognized, of which 71 are on the coast of the mainland and 28 on Cape Breton island.

STEAMSHIP COMPANIES TRADING TO AND FROM DIFFERENT PORTS IN THE PROVINCE OF NOVA SCOTIA

Destination	Starting point	Ports of call	Companies	Service
Liverpool or London, Glasgow, Cardiff, Swansea.	Halifax (winter) Sydney, C.B.	Halifax (winter)	Canadian Govt. Merchant Marine. " " "	Regular. Occasional
Liverpool or South- ampton.	St. John. British port "	Halifax (winter) " "	Canadian Pacific Steamships, Ltd. White Star- Dominion. Cunard-Anchor- Donaldson. " "	"
Plymouth, Cherbourg, London.	British port	"		
Liverpool or London, Manchester, Hull, Cardiff or Glasgow.	St. John, N.B., and Halifax. British port	St. Johns, Nfld.	Furness Withy & Co. Manchester Lines.	Regular
Australia and New Zealand.	London, England.	Halifax (winter), Suva (Fiji), Auckland, N.Z. Wellington, N.Z. Lyttleton, N.Z. Dunedin, N.Z. Melbourne, Aust. Sydney, Aust.	New Zealand Shipping Co.	Monthly (outward service only).
" "	Halifax (winter)	. . . . .	Can. Govt. Merchant Marine.	
Brazil and River Plate.	Halifax.	Buenos Aires, Montevideo and other S. Ameri- can ports.	Can. Govt. Merchant Marine.	Regular
West Indies and South America.	Halifax. Halifax. (from South- ampton)	Barbados, Trinidad, Demerara, St. Kitts, Antigua. Bermuda, Barbados, Trinidad, Georgetown. (Demerara).	Can. Govt. Merchant Marine. Royal Mail Steam Packet Co. (Pick- ford & Black, Halifax, Agents). " "	Winter Once in 14 days, al- ternate Fridays.

THE PROVINCE OF NOVA SCOTIA

STEAMSHIP COMPANIES TRADING TO AND FROM DIFFERENT PORTS IN THE PROVINCE OF NOVA SCOTIA—*Concluded*

Destination	Starting point	Ports of call	Companies	Service
Jamaica (Kingston) ..	Halifax.....	Santiago de Cuba, Turk's Islands.	Pickford & Black, Halifax.	Monthly
" ..	" ..	.....	Can. Govt. Merchant Marine.	Every three weeks
Havana, Cuba	Halifax.....	Havana.....	Can. Govt. Merchant Marine.	Regular
" ..	.....	Havana and Santiago.	Pickford & Black.	
B. Honduras	Halifax (winter)	Hamilton, Nassau, Kingston, Belize.	Can. Govt. Merchant Marine.	Every three weeks.
South Africa	Montreal..... St. John(winter)	Halifax..... Capetown, Port Elizabeth, East London, Durban.	Elder Dempster & Co.	Monthly
India, Straits Settlements and Dutch E. Indies. China and Japan	Halifax (winter)	Vancouver, Shanghai. Yokohama.	Can. Govt. Merchant Marine.	Occasion- ally.
Denmark	Copenhagen ..	Halifax.....	United SS. Co. of Copenhagen.	
Newfoundland	N. Sydney or Louisburg.	Port aux Basques or Placentia.	Reid Newfoundland Co.	Daily in summer, (tri- weekly in winter).
"	Halifax.....	.....	Can. Govt. Merchant Marine.	
"	N. Sydney..... New York.....	..... Halifax and St. Johns, Nfld.	Farquhar S. S. Co. Red Cross Line....	Saturdays Tuesdays
Montreal	Montreal.....	Charlottetown, P.E.I., Sydney, C.B. St. Johns, Nfld.	Canada SS. Lines..	Summer service

NOTE.—The Report of the Dominions Royal Commission recommends the development of the route from the British Isles to New Zealand and Australia via Halifax, Bermuda, Jamaica, Panama Canal and Tahiti, calling special notice to the fact that to make Halifax the Canadian port of call would only add 400 knots to the direct trans-oceanic route to Colon.

THE BRITISH WEST INDIES AND BRITISH GUIANA

The development of preferential trade with the West Indies and of the direct steamship service on which this trade relies concerns Nova Scotia perhaps more than any other province of the Dominion.

The present conditions of trade with the West Indies are these:—

1. The agreement published in 1920 between Canada and most of the British West Indian colonies, but subject to the approval of the Canadian

Parliament, of the legislature of each of the colonies concerned and of the Secretary of State for the Colonies, came into force on September 21, 1921, and remains so for ten years, or for longer if not terminated by due notice. The parties to the agreement are Canada, British Honduras, British Guiana and all the British West Indies excepting Bermuda. The main points are these:—

As a general principle goods being the produce of any of the British West Indies are to be entitled to a preference not exceeding 50 per cent of the duty imposed on similar goods imported into Canada from foreign countries.

Special duties are stated in the case of sugar, cocoa-beans, lime-juice, arrowroot, grape fruit and rum. Limes, cocoanuts and onions are to be free.

Goods being the produce of Canada and imported into the British West Indies are also granted a preferential tariff varying among the different islands from 50 per cent to 90 per cent of the duties imposed on similar goods imported from foreign countries. Special duties apply in the case of flour, spirits, wine and ale.

It is reciprocally provided that on six months' notice by either party the products of either may be entitled to preference only if conveyed by ship direct.

2. A subsidy is paid to the Royal Mail Steam Packet Company of \$340,666 a year for a fortnightly service between Canada, the West Indies and British Guiana, the whole amount being paid by the Dominion.

3. Steamers of the Canadian Government Merchant Marine also make Halifax their winter port as a starting point for the Bahamas, Barbados, Bermuda, British Guiana, Havana, British Honduras and Trinidad.

4. The West Indies already take 90 per cent of the Nova Scotian cured fish and there is a constant demand for such products as Nova Scotia does or could produce, viz., flour, oats, bacon, butter, cheese, condensed milk, potatoes, apples, hay, white pine and spruce, hardware, chairs, paper, canned goods, sulphate of ammonia and bunker coal, machinery and many manufactures, live stock. Ships on their return should carry full cargoes of goods which Canada imports heavily and which the West Indies produce, viz., sugar, molasses, rice, bananas and oranges, lime-juice, cocoa, coffee, logwood, cotton, oil, asphalt, spices and rubber, or of goods which the West Indies could produce or do produce now in small amounts, viz., tea, tobacco, rum, coffee, sago, lemons, pineapples, honey, oil.

Trade from Eastern Canada, if it were to follow the line of least resistance or cheapest freight rate, could flow to the West Indies as readily as to the western provinces, for Toronto and Montreal could ship to Trinidad at less cost than to Winnipeg, and to Halifax or St. John at less than half the cost, the freight rate being about the same as to United States ports. Montreal is nearer to Trinidad than to Vancouver, and Halifax nearer to British Guiana than to Brandon.

Nova Scotia is fortunate in having the West Indies and its multitude of magic isles within cheap and easy access. The palmy days of the sugar trade may return and enterprise find innumerable fields ranging from the staple products of the tropics to pearl-oyster beds, sponge gardens and turtle farms.

In times when conditions are elastic for a readjustment of trade relations and a re-grouping of the component parts of the Empire, it is well to remember that the West Indies, with first rate harbours in Antigua, S. Lucia and Grenada, are on the way to Panama and South America, and form a natural bridge for the passing to and fro of Canadian commerce.

Even free trade with the West Indies need not disturb existing economical relations, for the products of Canada and of the West Indies are clearly divided, each producing what the other cannot. With free trade, Canada would not need to pay a toll of some \$10,000,000 a year for produce obtained from the West Indies through the United States. In 1924 Canada's exports to the British West Indies (including Bermuda) were valued at \$12,476,308. Imports \$13,883,973.

British Guiana.—Valuable as is the trade with the West Indian region in general, and capable as it is of indefinite development, special attention may be directed to British Guiana as the richest and perhaps the least known of any tropical part of the Empire, whose trade may in time prove of particular importance to Canada.

The staple products of British Guiana are or will be sugar, rice, cacao, copra, coffee, cotton, rubber (balata), hardwoods, and bauxite. There has been a considerable output of alluvial gold, but attention is now concentrated on diamonds, of which in 1923 the production was 214,747 carats, value at five million dollars. The bauxite mines could supply all the needs of Canada for aluminium ore, but the whole product (\$530,345 in 1923) now finds its way to the United States.

The forests are nearly all under government control and cover 78,780 square miles or 87.4 per cent of the area of the colony. There is still, however, a considerable import of dressed and undressed pine, the United States supplying 89.9 per cent of the former and Canada 96.7 per cent of the latter. The hardwood greenheart, which is the chief export timber, and exported from nowhere except British Guiana, has been used in the Suez and Manchester ship canals and in making the dykes in Holland because of its resistive power to the teredo in submerged work. Mahogany and other furniture woods, and mangrove bark for tanning are other forest exports.

There are at least 7,000,000 acres of lowlands, requiring drainage and dykes but rich in potash and suitable for sugar, and besides these there are millions of acres of fertile land available for settlement. East Indian natives supply abundant labour.

A herd of 160 cattle brought from Brazil increased in twenty-six years to 10,000 in the great savannah region of 3,000,000 acres. These lands are suitable for cotton and tobacco. Banana planting is now in progress.

The water-powers of the colony are abundant, but so little was known about them in 1916 that the Imperial Committee could say nothing except that the "falls of Kaieteur" were said to form perhaps the finest untouched water-power of the Empire. They have since been included in a National Park of 320 square miles.

The bulk of the foreign trade of British Guiana is with Great Britain, but Canada, being equally favoured by the Imperial Preferential tariff, held in 1923 a share of 25 per cent compared with the 8.9 of the United States.

In 1924 Canada's exports to British Guiana were valued at \$2,528,960; the imports were \$6,221,841. The two largest items of United States exports, amounting to \$700,000, were preserved meats and machinery.

TRADE WITH MEXICO, CENTRAL AMERICA, SOUTH AMERICA AND THE WEST INDIES OTHER THAN BRITISH

Trade with the South American and Central American republics, and with the possessions of France and Holland in the West Indies and S. America has increased of late years, and should grow in proportion to more direct communication.

Freight from Eastern Canada has, in the past, been shipped, as a rule, via Boston, New York, or even via Liverpool (England), but some trade routes direct from Canada are now opened up by the Canadian Government Merchant Marine.

The imports from these countries in the year ending March 31, 1924, amounted to \$33,508,305, and the exports from Canada to \$24,817,093. Those countries taking exports above one million dollars were, in order of trade value, Argentine (7 millions), Cuba (6½), Mexico (3½), Brazil (2½). Those sending imports to Canada were: Cuba (10½ millions), San Domingo (8½), Peru (4), Argentina (4), Brazil (1½). The imports from Cuba and San Domingo were almost entirely sugar; those from Peru, sugar and crude petroleum. Venezuela and Columbia are notably worth further attention from Canadian traders, but the future of the trade with all the lands in and about the Caribbean sea hinges on direct transportation.

In considering statistics of trade between Canada and the West Indies and the Americas, it must not be forgotten that many large imports such as bananas, asphalt and nitrate from Jamaica, Trinidad and Chile respectively, are credited to the United States, and not to the country of origin. The value of these three items alone amounted to \$5,735,195 in the year ending March 31, 1924. Also, in spite of the preferential tariff on direct shipment, nearly all the Jamaican oranges and grapefruit consumed in Canada are brought from the United States.

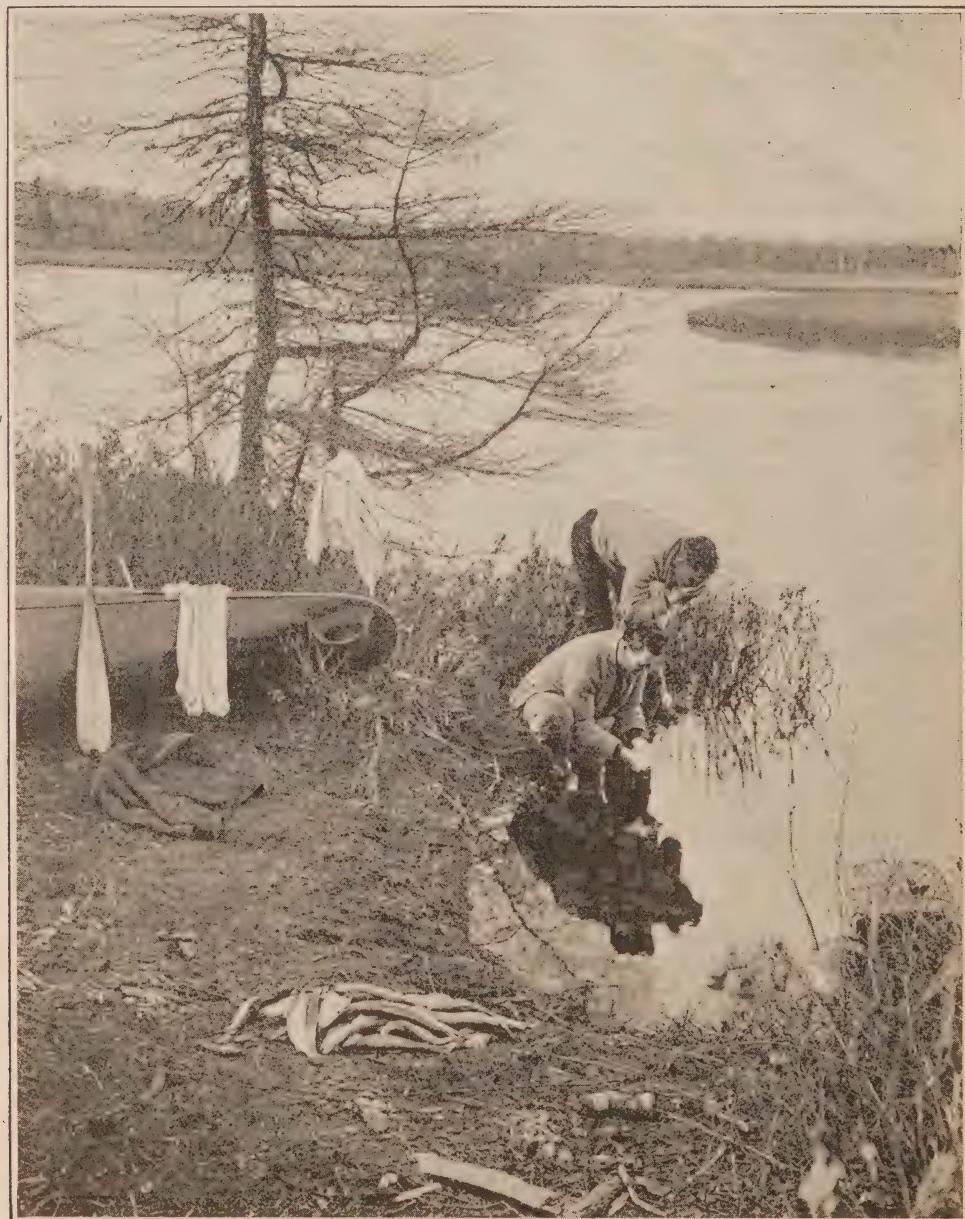
A supplement to the *Commercial Intelligence Journal* published by the Department of Trade and Commerce, Ottawa, gives full information as to ocean transfer, credits, exports, competition, packing, language, precaution, and other facts without knowledge of which no exporter is likely to succeed.

Canadian Banks in West Indies, Central and South America and Mexico.—A considerable increase of recent years in the number of branches of Canadian banks is an indication of an increasing volume of trade. In the West Indies the Royal Bank of Canada has 94 branches, the Colonial Bank (representing the Bank of Montreal) 26, the Bank of Nova Scotia 20, and the Canadian Bank of Commerce 5. In South America the Royal Bank has 26 branches, and the Bank of Commerce 2. In British Honduras the Royal Bank has a branch at Belize and in Costa Rica 2. The Bank of Montreal has 5 branches in Mexico, and the Colonial Bank 6 in British Guiana.

African Trade.—The Dominion Government pays a yearly subsidy of \$100,000 to the Elder-Dempster Company for a monthly service to South

African ports. These steamers call at Capetown, Port Elizabeth, East London and Durban, but carry no cargo inward from South Africa to Canada. Under the contract Halifax is a port of call from the starting points of Montreal or St. John. The value of goods of Canadian origin exported by this line in 1924-25 was \$6,511,160.

The trade of Canada with Africa other than by Mediterranean ports showed in 1924 exports of Canadian produce \$8,976,529; imports from Africa \$400,658.



A Holiday Jaunt in Nova Scotia

FISHING, SHOOTING AND RECREATION

To those who look for fish and game, Nova Scotia offers unusual sport and abundant variety. Thanks to wise government protection of fish, bird and beast, the country is now well stocked with moose, caribou, deer, hare, raccoon, geese, ducks, ruffed grouse, woodcock and snipe, salmon, ouananiche, brook trout, sea and lake trout, swordfish and tuna. A flock of 10,000 Canada geese winters in the sheltered waters of Queens and Shelburne counties; the woodcock returns to Nova Scotia in the latter part of March.

Salmon and trout.—Nearly all the large streams in Nova Scotia abound with salmon and trout. Surface salmon fly-fishing begins late in April in rivers like the Tusket, Clyde, Medway, Indian, Musquodoboit, Sheet Harbour and St. Mary's, and continues in the Cheticamp, Margaree, etc., in Cape Breton island, until mid-September. For the Margaree (Inverness), St. Mary's (Guysboro), Musquodoboit (Halifax), Medway (Queens) and Tusket (Yarmouth), fishermen take up quarters at Baddeck, Sherbrooke, Musquodoboit Harbour, Charleston, and Kemptville, respectively. Liverpool, in Queens county, is a good starting point for the Mersey river system with 600 square miles of watershed, which by connecting Rossignol, Fairy lake, and Fisher's lake, provides a good combination of canoeing and trout fishing with access to the fine game country to the north. Grand lake in Halifax county is a special place for the gamey land-locked salmon (ouananiche).

The *salmon* season for angling on the mainland of Nova Scotia, with the exception of the streams that flow into the straits of Canso and Chedabucto bay, is from February 1 to August 15, both dates included; on the above streams and on Cape Breton Island from June 1 to October 15. Land-locked salmon season, April 1 to September 30.

The season for *trout* begins April 1, and ends September 30. In the southwest counties April, May and September are the best for trout fishing, the absence of cold springs and brooks tending to make the water too warm in July and August. Anglers' permits cost \$5, and may be had from the local fishery officer.

There are no preserved waters in Nova Scotia.

Tuna.—To land a giant leaping tuna with rod and line is no mean feat and is done by few, though tried by many. The record fish, weighing 760 pounds, was caught at Great island near Port Medway, Queens county, by the guide L. D. Mitchell. Port Medway is also good for salmon and swordfish. Tuna fishing is an attraction also inside St. Margaret's bay, at Lockeport and Liverpool and in Cape Breton at Mira bay, St. Ann bay, reached by water from Sydney, and at Arichat.

Swordfish.—This fish, which may weigh 600 pounds, is harpooned while basking on the surface. When struck by the harpoon the line attached to a buoycask thrown overboard holds him till his dangerous struggles are over. This exciting sport can be had at the interesting old French settlement of Arichat, at Port Medway, at Halifax, and at St. Peter's bay, where the short canal admits boats into the Lower Bras d'Or lake.

Moose, Caribou, etc.—One of the best centres for moose, salmon, sea trout, and brook trout is Sheet Harbour, which is reached by a steamer from Halifax or by a 28-mile drive from Upper Musquodoboit, a point on the Canadian National railway. Another good centre for bear, moose, deer

and trout is Kedgemakoodge, or Fairy lake. Here are the headquarters of the Rod and Gun Club, with club house, log cabins and cottages for sportsmen and tourists.

Moose are to be found in all counties outside Cape Breton and Richmond. Amherst, Caledonia, Halifax, Guysboro, New Glasgow or Truro are all rendezvous within easy reach of moose-land, and, as the law allows each hunter to shoot but one, an average of about 1,400 for the last few years is proof that they are plentiful.

Details as to accommodation, guides, game laws, licenses and localities are to be found in "Hunting and Fishing," published by the Game Commissioners of Nova Scotia, or in "Out-of-Door in the Maritime Provinces," published by the Canadian National Railways.

NOVA SCOTIA PROVINCIAL GAME LAWS

Big game.—Open season for bull moose, October 1 to November 15. No person may kill more than one in one season. Open season for deer October 16 to October 31. Caribou are protected until September 16, 1930. The females of all the above are protected, as are also all their young up to the age of two years. None of the above big game may be hunted with dogs.

Game Birds.—The bag limit of woodcock is 10 per day; of snipe 25. The open season for ruffed grouse (birch partridge) is from October 1 to October 31. The limit of bag is 5 per man in one day. Pheasant, spruce partridge, sharp tailed grouse and wood-duck are protected at all times.

Hunting Licenses for big game, \$40; for small game except woodcock and snipe, \$15. Licenses may be had at the office of the Commissioner of Forests and Game in Halifax, or Game Warden and Municipal Clerks elsewhere.

THE MIGRATORY BIRDS CONVENTION ACT, 1917

This Act, which runs for at least fifteen years, is designed to preserve insectivorous birds in the interest of agriculture, and wild fowl in the interest of food supply and health-giving sport.

The yearly damage to crops in Canada by the pests which are birds' natural food has been estimated at many million dollars. The great auk, the passenger pigeon and the Labrador duck are already extinct, but the Act may save the whooping crane and other birds nearing extermination.

The Bird Sanctuaries in the province of Nova Scotia are "Seal Island" and "Mud Island" in the vicinity of N. Lat. 43° and Long. 66°.

SUMMARY OF THE ACT

Birds protected continuously throughout the year.—

- (a) All migratory insectivorous birds, viz.: bobolinks, catbirds, chickadees, cuckoos, flickers, fly-catchers, grosbeaks, humming birds, kinglets, martins, meadowlarks, nighthawks, or bull-bats, nut-hatches, orioles, robins, shrikes, swallows, swifts, tanagers, titmice, thrushes, vireos, warblers, wax-wings, whip-poor-wills, woodpeckers, and wrens and all other perching birds which feed entirely or chiefly on insects.

- (b) All migratory non-game birds, viz.: auks, auklets, bitterns, fulmars, gannets, grebes, guillemots, gulls, herons, jaegers, loons, murres, petrels, puffins, shearwaters and terns.
- (c) Shorebirds or waders: avocets, curlew, dowitchers, godwits, knots, oyster catchers, phalaropes, plovers, sand pipers, snipe, stilts, surf birds, turnstones, willet, woodcock, and yellow legs. (NOTE.—Woodcock, Wilson or Jack snipe may be shot in Nova Scotia from October 1 to November 30; greater and lesser yellow legs, black breasted and golden plover from August 15 to November 30). (All dates inclusive.)
- (d) band tailed pigeons, little brown sandhill and whooping cranes, swans and curlew.
- (e) Wood duck and eider duck.

Migratory game birds protected except in an open season.—

Water fowl (brant, wild duck and geese), rails (coots, gallinules, sora and other rails). The open season for geese and brant in Nova Scotia is from September 15 to December 31. In Yarmouth and Shelburne counties ducks and rail may be shot from October 15 to January 31, and in Shelburne and Queen's counties geese and brant on the issue of a permit from the Minister, from November 1 to February 14.

The killing, hunting, taking, injuring or molesting of migratory game, migratory non-game or migratory insectivorous birds, or their nests or eggs, or parts thereof, is prohibited throughout the year except as otherwise provided in the regulations. Permits may be issued by the Minister of the Interior to kill protected birds if proved to be doing serious injury to agricultural or other interests, and also for scientific or propagation purposes.

Indians and Eskimos may take at any season the following migratory non-game birds; auks, auklets, guillemots, murres and puffins and their eggs for human food and their skins for clothing, but these birds so taken shall not be sold or offered for sale or otherwise traded.

For the further protection of bird life there are certain shooting restrictions. It is forbidden for any person to sell, expose for sale, buy, trade or traffic in any migratory game bird killed or taken during the open season.

Penalty.—For violation of Act or Regulations based thereon fine of from \$10 to \$300 besides costs or imprisonment for a term not exceeding six months, or both fine and imprisonment, and confiscation of guns, boats and appliances.

The enforcement of the Migratory Birds Regulations is in charge of a full-time staff, under R. W. Tufts, Wolfville, N.S., Chief Migratory Bird Officer of the Maritime Provinces, who will be pleased to furnish any further information desired.

Yachting.—The Royal Nova Scotia Yacht Club at Halifax and the Royal Cape Breton at Sydney are well known to yachtsmen, as are also the yacht builders at Dartmouth, Port Hawkesbury, Shelburne and La Have. The Bras d'Or lake and the Little Bras d'Or lake, fiords or arms of the sea, entered by narrow channels, are the places of all places for sailing and motor-boats.

SUMMER VISITORS AND TOURISTS

That certain places attract foot-loose men and families for their summer outing is positive proof that they are healthy and accessible and either beautiful, interesting or exciting. The summer playground of Nova Scotia meets all these needs.

Steamers from Boston to Yarmouth (B and Y line), or from Boston to Halifax (Farquhar or Halifax S.S. Company lines), or from New York to Halifax (Red Cross or Furness-Withy lines), or from New York, Boston or Portland by the Eastern S.S. Company line and thence to Digby by the daily C.P.R. boat, through-sleepers on trains between Boston and



Up-to-date Portaging for Tourists in Nova Scotia

Halifax and on the two trans-Canada trunk lines,—all these existing transport services, stimulated by competition and by the surely-impending rivalry of aircraft, bring an evergrowing summer population to this New Scotland, where, in parts, Gaelic is a second language, where such names as Loch Lomond or the Craignish Hills are echoes from across the Tweed, and where beside the “primose path of dalliance” there is mickle “Caledonia stern and wild, Meet nurse for a poetic child.”

The “Green Acadian mountains with sylvan rivers among them” have, thanks to the New England poet, been so widely advertised as the “Land of Evangeline” that the story of the little French maid has drawn and still draws a main stream of tourist travel to the Annapolis valley. But now in addition to the lines of railway detailed on another page so many new roads have been opened and so many old ones improved that the “gypsy car” style of travel along highways and byways in all parts of the province is in favour.

Taking Halifax, Yarmouth and Digby as starting points in the southwestern part of the peninsula, pleasant summer resorts are dotted along the railroads and motor roads that encircle it, and within easy access

of others that cross from the Atlantic to the bay of Fundy are lakes strung together by streams that offer all that canoeist or angler can ask. On the Atlantic coast lie the well known resorts of Hubbard and St. Margaret's bay, Chester with its Hackmatack Inn, Mahone bay, Lunenburg, Bridgewater, Liverpool and Shelburne, and the picturesque coast between Pubnico and Yarmouth. On the bay of Fundy side is Weymouth, facing which is Digby neck broken by the Petite Passage; on the Annapolis basin are Digby, Deep Brook and Annapolis Royal, the first permanent settlement of Europeans in Canada; on the Basin of Minas, Wolfville and Grand Pré:—names well known to visitors as refuges from the heat of big eastern cities in the United States.

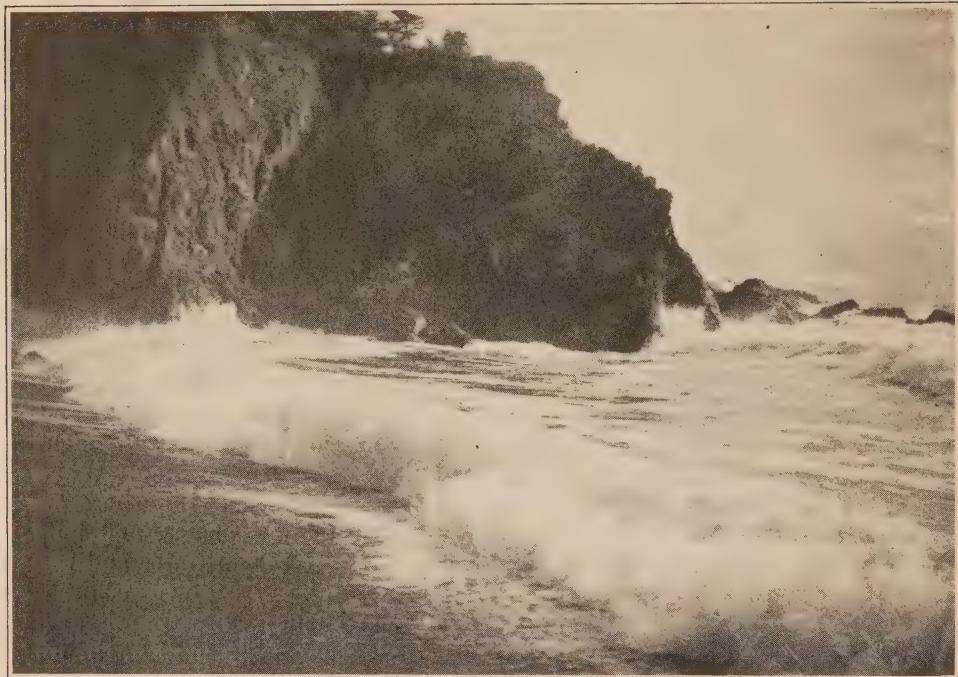
The less known scenic coast east of Halifax is opened up by a coast road which crosses Sheet Harbour and turns north over the St. Mary river on its way to Antigonish and Port Mulgrave Ferry.

The island of Cape Breton has remarkable points of beauty and interest. In the Bras d'Or lake district are Baddeck, Whycocomagh, Grand Narrows and the lake road from St. Peter's to Sydney. Wave action has cliffed the headlands and other exposed stretches of shore on the lakes, revealing snow-white masses of gypsum, red shales, and buff lime-stones, which, with the ever changing blue of sky and water and the varied tint of green on the hill sides, makes the Bras d'Or country peculiarly beautiful. The depth of these inland lakes is extraordinary. A trip from Sydney to Louisburg, varied maybe by the pretty trip up Mira river from Mira gut, passes through the famous coal field of Cape Breton to the ruins of what was once the most powerful fortress on the western hemisphere. In the northern counties of the island on the road from Whycocomagh to Cheticamp are the fine fishing regions of lake Ainslie and the Margarees, and whether by sea or highroad, it is not more than a day's pleasure run to cover the distance from Sydney by Ingonish to the wild grandeur of Cape North.

"As the boat passes Cape Egmont, another long straight escarpment meets the view coming out to the shore between Aspy bay and extending along the coast to Money point near Cape North. *This is perhaps the most magnificent view in Nova Scotia.* The great 1,200 foot escarpment is slashed by many deep torrent valleys. Between them in two or three places, peaked mountains known as "Sugar loaves" rise to the level of the plateau like huge pyramids standing in line. These bold summits are said to be the first sighted by Sir John Cabot. From the shore of the "North pond" of Aspy bay, it is a moderate climb to the top of the Sugar loaf mountain, and one well worth the effort."

Rocking stones, boulders and drumlins.—The great Rocking Stone of Spryfield near Halifax is a wonderful example, perhaps the largest in the world, of a "perched boulder" left by the ice sheet and so delicately poised that it can be rocked by a man using a pole as a lever. The weight is nearly 500 tons. A few hundred yards away is "Table Rock"—remarkable because this huge boulder rests on 3 smaller ones of which one is a grey quartzite foreign to the native granite of the other two.

Other large glacial boulders are Sentinel Rock and Thrumcap Rock in Yarmouth harbour. Among the mass of boulders between Kejimkujik (Fairy lake) and Pescawess lake are one 35 feet high and another 1,050 tons in weight.



St. Paul's Island, off the Cape Breton Coast



Ingonish, Cape Breton Island, one of Nova Scotia's picturesque Atlantic Bays

Drumlins are oval or elliptical hills, locally named "Whalebacks," of plastic boulder clay fashioned by the moving ice-sheet. Citadel Hill at Halifax is a drumlin. "The wide spacing of drumlins around Chester bay allows their beauty to be fully seen. The deep water in which they lie makes ideal conditions for sailing and boating." Where slate beds occur along the coast of Yarmouth county drumlins are conspicuous.

Submerged forests.—"The most widely known submerged forest in Canada and in many respects the most remarkable is at old Fort St. Lawrence, 3 miles northwest of Amherst. The stumps (pine and beech) are rooted in stratified deposits of the Champlain stage of post glacial marine deposits. It lies 30 feet below high tide mark, and the largest pine stump is 2' 6" in diameter with 200 rings of growth."

The Grand Pré marshes also cover another forest primeval, and drowned stumps or forests are also found at Yarmouth, Cape Sable island, Lunenburg, Halifax and Guysborough.

It must be concluded either that the land around the Bay of Fundy has sunk or the Atlantic ocean has risen at least 15 feet and perhaps 35 owing probably to the melting of the ice of the glacial period, and so recently that the wood is still very well preserved.

HISTORIC SITES

The Department of the Interior, on the recommendation of the Historic Sites and Monuments Board of Canada, is endeavouring to save and to commemorate for the province and the nation the several sites of national importance associated with its early history. The principles underlying such a purpose are to protect these sacred spots and to preserve them for all time, so as to infuse in future generations an imagination which inspires patriotism.

At sites considered of national importance, which are to be marked, and where there are no historic remains to be restored or preserved, but where it is desired to perpetuate the historic occurrences, a standard in the form of a cairn or boulder is erected to carry the Department's bronze tablet bearing an inscription containing the historic data pertaining to the site.

Among the sites which have been acquired and commemorated to date are the following:

Fort Anne, Annapolis Royal, N.S.—This is one of the most notable sites on the North American continent, dating back to 1604, when de Monts, Champlain and kindred brave spirits were sent out from France to found a colony in the New World. Only traces of the original fort remain, but the officers' quarters, as well as the first magazine erected in 1702 are in a fair state of preservation. Many of the original features have been restored and the park is one of the most interesting in the east, it and its museum being annually visited by thousands of tourists.

Louisburg, Cape Breton.—Here are the ruins of the French fort erected from 1720-40 at a cost of about six million dollars and once proudly called the "Dunkirk of America." Its final capture by the British on July 26, 1758, was the first of a series of events which culminated in the giving of Canada to the British Crown. The fortress and all the harbour

defences, with the exception of the bomb proofs, were shortly afterwards levelled, by orders from the British government. An area of 72 acres has been acquired for historic site purposes. The erection of four tablets is proposed.

Fort Edward at Windsor.—Formerly old French Fort Piziquid, which came into possession of the British soon after their establishment of power at Halifax in 1749, and was used by them for many years for defensive purposes against the Indians and Acadians. An area of 27 acres has been acquired, on which is situated the original blockhouse intact.



A Remnant of Louisburg Fortress, one and a half centuries after three years' work of demolition by the Royal Engineers

Fort Lawrence, near Amherst.—Erected in 1750 at Misagouche by Major Charles Lawrence, afterwards Lieutenant-Governor of Nova Scotia, for the defence of the Isthmus of Chignecto, and which proved an important factor in the struggles between the French and the English during the eighteenth century. The fort has been demolished and now only vague traces of the original trenches remain. A field stone cairn and tablet have been erected on a small plot of land comprising the original site, which was donated by Mr. David Lawrence.

Champlain's Habitation at Lower Granville.—This is the site of the first fort or habitation of Port Royal built by the French under de Monts and Champlain, 1605. It was attacked and partially destroyed in 1613 by a British force from Virginia, restored and occupied by Scottish colonists in 1629 and laid waste on their retirement from the country in 1632. A cairn and tablet have been erected on a small plot of land adjacent to the road leading from Victoria Beach to Granville Ferry.

Halifax (First Printing Press).—A tablet has been erected in the lobby of the Province House at Halifax to commemorate the First Printing Press in what is now British North America, established in 1751 by Bartholomew Green, Jr., and who was succeeded in 1752 by John Bushell. On it was printed March 23, 1752, Canada's first newspaper, "The Halifax Gazette," later known as the "Nova Scotia Royal Gazette," which has been regularly issued since that date.

Shelburne.—A large boulder and tablet have been erected on a site provided by the town at the intersection of King and Bay Streets facing the harbour, commemorating it as the Loyalist Town of Nova Scotia, which was settled in the years following the close of the American Revolution by men and women determined to remain under the flag and rule of Great Britain rather than become citizens of the United States. The first fleet with settlers arrived in the harbour, which was then known at Port Roseway, on May 4, 1783, and the town was laid out during the same year.

Halifax (First Royal Dockyard).—A tablet was placed on one of the original pillars in His Majesty's Dockyard at Halifax to commemorate the First Royal Dockyard in present British North America. This was of special importance during the American Wars of 1775-81, and also played a prominent part in the Great War of 1914-18.

The sites of the Battle of Grand Pré, First Post Office in British North America at Halifax, King's College at Windsor, Admiral D'Anville's Encampment at Bedford Basin, and Fort La Have have been considered of sufficient importance to receive commemoration and will be suitably marked in due course.

(Contributed by the Director of the Canadian National Parks, Department of the Interior.)

ADDRESSES FOR SPECIAL INFORMATION ABOUT NOVA SCOTIA

Agent General for Nova Scotia.—Mr. John Howard, Derby House, St. James Square, London, S.W.

Agricultural Societies.—Mr. F. L. Fuller (Superintendent), Halifax, N.S.

Dairying.—Mr. W. A. Mackay (Superintendent), Halifax, N.S.

Farmers' Association.—Mr. C. R. B. Bryan (Secretary), Truro, N.S.

Forests and Game Commissioner.—Mr. T. A. Knight, Halifax.

Fruit Farming.—Mr. P. J. Shaw, Provincial Horticulturist, Truro, N.S. Mr. M. K. Ells, Secretary of the Nova Scotia Fruit Growers Association, Port Williams, N.S.

Poultry.—Mr. J. P. Landry (Superintendent), Truro, N.S.

Superintendent of Dominion Experimental Farms.—

Mr. W. S. Blair, Kentville, N.S.

Mr. W. W. Baird, Nappan, N.S.

List of Unoccupied and Uncultivated Lands.—Natural Resources Intelligence Service, Ottawa.

Industries and Immigration Department.—Mr. W. B. MacCoy, K.C. (Secretary of the Department), Hollis St., Nova Scotia.

Mineral Resources.—Deputy Commissioner of Mines, Mr. T. M. Brown, C.E., Halifax.

Trade Inquiries.—

Department of Trade and Commerce, Ottawa.

Mr. Harrison Watson, Canadian Trade Commissioner, 73 Basinghall St., London, E.C., England.

Mr. J. Forsyth Smith, 31 North John St., Liverpool.

Mr. Douglas S. Cole, Sun Building, Clare St., Bristol.

Mr. Gordon B. Johnson, 87 Union St., Glasgow.

Secretary of Board of Trade, Halifax, N.S., Mr. E. A. Saunders.

Water Powers.—

Secretary of Nova Scotia Water Power Commission, Halifax, N.S., Mr. K. H. Smith, Chief Engineer.

Dominion Water Power and Reclamation Service, Department of the Interior, Ottawa.

Technical Education.—Mr. F. H. Saxton, Halifax.

Addresses for the use of Returned Soldiers and other settlers.—

Department of Soldiers' Civil Re-establishment, Camp Hill Hospital, Halifax, N.S. Employment Offices at Halifax, New Glasgow, Sydney.

Hostel, Y.M.C.A. Hostel, Barrington Street, Halifax.

Soldier Settlement Board of Canada, St. John, New Brunswick.

Any inquiry regarding the natural resources of Nova Scotia or other provinces of Canada may be addressed to the

DIRECTOR,
NATURAL RESOURCES INTELLIGENCE SERVICE,
DEPARTMENT OF THE INTERIOR,
OTTAWA.

BIBLIOGRAPHY

Letters of "Agricola," John Young.....	1818
Historical and Statistical Account of Nova Scotia by T. C. Haliburton ("Sam Slick"), Halifax	1818
History of Nova Scotia or Acadie, Beamish Murdoch.....	1865
Island of Cape Breton, Richard Brown.....	1869
Coal Fields and Coal Trade of the Island of Cape Breton, Richard Brown....	1871
History of Nova Scotia, Duncan Campbell.....	1875
Un Pèlerinage au Pays d'Evangéline, L'Abbé H. R. Casgrain.....	1888
Lévis et Montcalm, L'Abbé H. R. Casgrain, Quebec.....	1892
Montcalm and Wolfe (Chap. XIX), F. Parkman.....	
A Half-Century of Conflict (Chap. XVIII-XX), F. Parkman.....	
Builders of Nova Scotia, Sir J. Bourinot.....	1900
Acadian Geology, Sir W. Dawson.....	1852
Joseph Howe's Letters and Speeches (Boston, 1858), Halifax.....	1909
Farm Cottage Life in Nova Scotia, Arthur P. Silver.....	1900
Call of Nova Scotia to the Emigrant and Sportsman, Arthur P. Silver.....	1908
Fight with France, A. G. Bradley, Methuen & Co.....	1900
Making of Canada, A. G. Bradley, Constable & Co.....	1908
Louisburg from its foundation to its fall 1713-1758, J. S. McLennan.....	1918
Province that has been passed by, Beckles Willson, London.....	1912
Baedeker's Canada	1923
"All Afloat," A Chronicle of Craft and Waterways, No. 31 of "Chronicles of Canada," by W. Wood.....	1915
Place Names of the Province of Nova Scotia, Thomas J. Brown.....	1922
Minerals of Nova Scotia, Edwin Gilpin, Halifax.....	1901
Minerals and Mining, Nova Scotia, Hon. Robt. Drummond.....	1918
History of Grand-Pré, John Frederic Herbin, Wolfville.....	1918

OFFICIAL PUBLICATIONS

Canada Year Book published by Dominion Bureau of Statistics, Ottawa.....	1917
Dominions Royal Commission Report, Cd. 7971, London.....	1912
Forest Conditions in N.S., B. F. Fernow, Ottawa.....	
Wood-using Industries of the Maritime Provinces, Lewis & Boyce, Forestry Branch Bulletin, No. 44.....	1914
Nova Scotia Water Power Commission, Progress Reports, Halifax.....	1916-1921
Coal Fields and Coal Resources of Canada (Geol. Survey, Mem. 59).....	1915
Bituminous or Oil Shales of N.B. & N.S. (Mines Branch, No. 55)	1909
Iron Ore Occurrences in Canada (Mines Branch 217), Lindeman & Bolton....	1917
Wabana Iron Ores, A. O. Hayes (Geol. Survey, Mem. 78)	1915
Malagash Salt Deposit, A. O. Hayes, Dept. of Mines, Mem. 121.....	1920
Gypsum in Canada (Mines Branch Bulletin 245), L. H. Cole.....	1913
Building Stones of Canada, Vol. 1, W. A. Parks (Mines Branch 203).....	1912
Gold Fields of Nova Scotia, Wyatt Malcolm (Geol. Survey, Mem. 20 E).....	1912
Clay and Shale Deposits of Nova Scotia, Ries and Keele (Geological Survey 16).....	1912
Geological Map of Nova Scotia (Geol. Survey, Map 39 A).....	
Physiography of Nova Scotia, J. W. Goldthwait, Geol. Survey Memoir 140....	1924
Fur-Farming in Canada (Com. of Conservation), J. W. Jones.....	1914
The Apple in Canada, W. T. Macoun, Dom. Exper. Farm, Bulletin No. 86.....	1916
Investigation of the Peat Bogs and Peat Industry of Canada, A. Anrep (Mines Branch 351)	1915
Fish, Birds and Game (Com. of Conservation).....	1916
Utilization of Fish Waste in Canada, J. B. Feilding (Com. of Conservation) ..	1918
"The Angler Fish," C. J. Connolly, Antigonish, N.S. (Bulletin No. 3, Biological Board of Canada).....	1919

OFFICIAL PUBLICATIONS—*Concluded*

"The Lump Fish," Philip Cox (Bull. No. 2, Biological Board of Canada)....	1919
"The Canadian Plaice," A. G. Huntsman (Bull. No. 1 of Biological Board)....	1918
Canada and the British West Indies, Watson Griffin (Dept. of Trade and Commerce)	1915
Guide Book No. 1, Excursion in E. Quebec and the Maritime Provinces, Pts. I & III (Geol. Survey Nos. 531-2)..... (See Annotated Catalogue of Publications of the Geological Survey for a detailed list of reports on minerals, maps, etc., relating to Nova Scotia, published at Ottawa 1920).	1913
Micmac Place Names in the Maritime Provinces and Gaspe Peninsula, Lieut.-Col. Anderson, C.M.G., F.R.G.S., Geographic Board of Canada, Ottawa...	1919
Out of Doors in Maritime Provinces (Can. Nat. Railways).....	1922
Minerals and Mining Industries on the Canadian National Railways.....	1922
Nova Scotia, Canada, its Development and Opportunities, 3rd edition (Dept. of the Interior, Ottawa).....	1925
Maxwellton District, Nova Scotia, Nat. Res. Int. Serv., Dept. of Interior, Ottawa	1923
Opportunities for Settlers in the Annapolis and Cornwallis Valleys and other sections, Nat. Res. Int. Serv., Ottawa.....	1925

